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Groundwater and Soil Evaluation  
5030 Firestone Boulevard  
and 9301 Rayo Avenue  
South Gate, California  
22 MAY 01

**Dragun Corporation**

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**Scientists ■ Engineers**

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and 9301 Rayo Avenue  
South Gate, California  
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## Professional Certification

All engineering and geologic evaluations in this report were performed under the direct supervision of a California Registered Professional (Civil) Engineer with at least five years of hydrogeologic experience. This certification is made in compliance with the State Water Resources Control Board Resolution No. 92-49 (Water Code Section 13304) and the California Business and Professions Code Sections 6735, 7835, and 7835.1".



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## I. INTRODUCTION

In anticipation of a transfer of the property at 5030 Firestone Boulevard in South Gate, California (the Site), Jervis B. Webb Company of California (Webb) asked The Dragun Corporation and IT Corporation to review the reports on the soil and groundwater conditions at the Site. Figure 1 is the property location map.

Upon our review of the Site data, it was apparent that some soils at the Site contained concentrations of chlorinated volatile organic compounds (VOCs) above the detection limits that could be linked to historic Site activities. The reports indicate that Webb has implemented a series of remedial activities to address these impacted soils (EKI, 2000e). However, during our review of the data, The Dragun Corporation and IT Corporation (we) observed that the data strongly indicate that groundwater contamination beneath the Site does not appear to be related to Site activities; rather, the chemicals in the groundwater appear to be from an upgradient, off-site source.

The main objective of this report is to present the data which led to our conclusion that an off-site, rather than an on-site source, caused the groundwater contamination beneath the Site.

It is our professional opinion that the groundwater beneath the Jervis B. Webb Company of California property located at 5030 Firestone Boulevard, South Gate, California has been substantially impacted by an off-site source, not by on-site activities. There are three main bases for our opinion, including:

1. The observed groundwater flow direction in the uppermost aquifer at the Site has consistently been from north to south during the period of observation. This means that the upgradient property boundary is along Firestone Boulevard. VOCs such as TCE have been detected in the groundwater at MW-2, which is located on the upgradient property boundary. Since the soil gas and soil chemistry data indicate that there is no detectable TCE in the soil at MW-2, the TCE in the groundwater must have originated from an upgradient and off-site source.
2. Concentrations of TCE exceeding 25,000  $\mu\text{g/L}$  have been reported in the groundwater at MW-1, CPT-6, and CPT-7. These high concentrations of TCE infer that DNAPL has impacted the groundwater somewhere along its flow path. However, the concentrations of TCE observed in soil are magnitudes lower than would be necessary to infer the presence of DNAPL in the soil. Therefore, the observed soil concentrations of TCE are not high enough to explain the observed groundwater concentrations of TCE. Furthermore, the continuous clayey unit encountered at about 25 fbgl would inhibit the vertical migration of DNAPL to the water table, which is located at approximately 45 fbgl. No soil chemistry data indicate that DNAPL has accumulated above the clayey unit at the Site.



3. The ratios of TCE to PCE in the soil gas and soil are similar to each other; however, they are strikingly different from the TCE to PCE ratio in the groundwater. This indicates that the TCE and PCE in the soil have not caused the TCE and PCE impact in the groundwater.

It is also our professional opinion that the impacted soil below the clayey unit at about 25 fbgl has been impacted by the groundwater and not by a surface release of chemicals at the Site. There are three main bases for our opinion, including:

1. As mentioned previously, the observed concentrations of VOCs in the soils are not high enough to be the source of the groundwater contamination.
2. The TCE/PCE ratio in the deeper soils is much more similar to that of the impacted groundwater than to that of the soil above the clayey unit.
3. The clayey unit at 25 fbgl would restrict the downward migration of chemicals from above 25 fbgl.

Our review included data from 16 reports prepared by Erler and Kalinowski, Inc. (EKI). We reviewed the following summary reports:

“Phase I Environmental Site Assessment of the Jervis B. Webb Company Properties at 9301 Rayo Avenue and 5030 Firestone Boulevard, South Gate, California” dated June 20, 1996 (EKI, 1996)

“Phase II Soil Investigation Report for the Jervis B. Webb Company Property, 5030 Firestone Boulevard, South Gate, California” dated February 18, 1998 (EKI, 1998a)

“Phase II Groundwater Investigation Report, Jervis B. Webb Company Property, 5030 Firestone Boulevard, South Gate, California” dated June 30, 1998 (EKI, 1998b)

“Additional Groundwater Investigation and Quarterly Monitoring Report for October to December 1998, Jervis B. Webb Company Property, 5030 Firestone Boulevard, South Gate, California” dated January 13, 1999 (EKI, 1999a)

“Report on Site Conditions, Local Hydrogeology, and Offsite Groundwater Production and Work Plan for Groundwater Remediation, Jervis B. Webb Company of California, 5030 Firestone Boulevard, South Gate, California” dated November 30, 2000 (EKI, 2000e)

In addition, we also reviewed progress reports and various other reports by EKI (1998c, 1998d, 1999b, 1999c, 1999d, 1999e, 2000a, 2000b, 2000c, 2000d, and 2001).

The following sections of this report discuss the hydrogeological, soil gas, soil chemistry, and groundwater chemistry data, which give rise to our conclusion that the groundwater contamination beneath the Site originated upgradient of the Site.

## II. REGIONAL HYDROGEOLOGY

The Site lies within the Central Groundwater Basin, a part of the larger Coastal Plain of Los Angeles County (DWR, 1961). Water-bearing formations within the Central Basin (beneath the Downey Plain) include the Recent Alluvium, the Lakewood Formation, and the San Pedro Formation (in order from shallow to deep). The Recent Alluvium includes the Semiperched Aquifer, the Bellflower Aquiclude (the only confining layer), and the Gaspar Aquifer. The Lakewood Formation includes the Exposition Aquifer and the Gage Aquifer. The San Pedro Formation includes the Hollydale Aquifer, the Jefferson Aquifer, the Lynwood Aquifer, the Silverado Aquifer, and the Sunnyside Aquifer.

The Water Replenishment District of Southern California (WRDOSC, 2000) has subdivided the groundwater aquifers in the Central Basin into six groundwater zones according to their water quality characteristics. The six groundwater zones are represented by regional nested monitoring wells, which are sampled twice annually by the WRDOSC. The specific wells closest to the Site include the South Gate Well # 1, located about 1 mile south of the Site, and Downey Well #1 located about three miles to the southeast. The six zones are described as follows (based on July 1999 data):

Zone	Aquifer	Screened Interval	TDS	TCE	PCE
6	Gaspar Aquifer	90 - 110 ft.	760	2.5	ND
5	Exposition	250 - 270 ft	430	ND	0.5
4	Hollydale/Jefferson	370 - 390 ft	470	0.8	7.9
3	Silverado	580 - 600 ft	430	ND	0.6
2	Silverado	940 - 960 ft	390	ND	ND
1	Sunnyside	1170 - 1190 ft	300	ND	ND

In general, the water quality becomes much better with depth. The total dissolved solids (TDS) in the lowest zone (300 mg/l) are less than half the TDS level in the upper zone (760 mg/l). The water can generally be characterized as a calcium bicarbonate type (in all zones).

The general flow direction in the deeper aquifers is to the west, while the flow direction of the shallow aquifers (Gaspar and Exposition) is towards the south. The shallow aquifer encountered beneath the Site is believed to be the Gaspar Aquifer (Zone 6). The water levels measured

beneath the Site (approximately 59 ft above mean sea level [MSL]) generally correspond with the Gaspur and Exposition monitoring wells (Zones 6 and 5) monitored by the WRDOSC (40 - 51 feet MSL). According to a DWR geologic cross section beneath the Downey Plain (DWR, 1961), the thickness of the Gaspur Aquifer is not believed to be very extensive in the vicinity of the Site. The thickness of the aquifer may be only 20 to 40 feet, due to the thinning of the formation in an easterly direction beneath the South Gate area. The Gaspur Aquifer is believed to be underlain by a confining layer that may be as thick as 100 to 150 feet. According to the WRDOSC, the Gaspur Aquifer is not hydraulically connected to the deeper drinking water aquifers.

### **III. SITE HYDROGEOLOGY**

The following text summarizes our interpretation of the hydrogeology at the Site and is based on information presented in previous reports (EKI, 1998a, 1998b, 1999a, 2000e).

#### Site Geology

Figures 2 and 3 are maps showing locations of 19 soil borings, five monitoring wells, and nine CPT (cone penetrometer tests) locations used by EKI (1998a, 1999a, and 2000e) to interpret the hydrostratigraphy of the Site. Figure 2 also shows the location of hydrostratigraphic cross-section A-A' presented by EKI (1998a and 2000e).

Hydrostratigraphic cross-section A-A' (Figure 4) indicates that the Site is underlain by approximately 45 feet of unsaturated, unconsolidated, and interbedded sandy, silty, and clayey soils. Beneath the water table, which occurs at approximately 45 feet below ground level (fbgl), the soils are unconsolidated and interbedded silty sand, sandy silt, and sand to the depth of investigation (approximately 73 feet).

The soil boring and CPT data indicate that a continuous, two-to-five foot thick clayey unit extends across the Site at approximately 25 fbgl. The clayey unit is described in the borehole logs as highly plastic, soft to firm, and moist (EKI, 1998b and 1999a). Above the clayey unit is almost 15 feet of moist to wet sandy silt to silty clay.

In summary, the soil boring logs and CPT data indicate the Site is underlain by interbedded unconsolidated soils to at least 73 fbgl. A clayey unit is continuous and competent. The water table is encountered approximately 45 fbgl.

## Site Groundwater Flow Conditions

Table 1 summarizes the water table elevation data for the Site (EKI, 2000e). Appendix A provides copies of the data tables included in the various reports by EKI. Appendix B includes the water table maps included in the various EKI reports.

Figure 5 is the water table map for the Site for November 5, 1998. The November 5, 1998 water table map is included in this report because it coincides with the most areally comprehensive groundwater sampling for the Site. This occurred during October/November 1998 when EKI collected groundwater samples from the push-in-place piezometers (PIPP) in the CPT borings during October 1998 and from the monitoring wells during November 1998. The groundwater flow direction, based on the November 5, 1998 data, is generally from north to south.

The November 5, 1998, water table map is generally representative of the groundwater flow conditions documented during the 28 other monitoring events conducted between February 1998 and December 2000. Appendix B provides copies of water table maps prepared by EKI. Appendix C includes SURFER maps of the water table for all of the monitoring events conducted between February 1998 and December 2000.

The water table maps in Appendices B and C indicate that although the groundwater flow direction has varied to a limited extent, groundwater flow at the Site during the period of investigation has consistently been generally from north to south. The north to south groundwater flow direction is consistent with more regional investigations. This indicates that the Firestone Boulevard property boundary is consistently the upgradient property boundary and the property boundaries to the west and east are also sometimes upgradient. From the contaminant transport perspective, this indicates that chemicals in the groundwater would consistently move in the general direction from north to south.

The water table maps provided in Appendices B and C also show that the hydraulic gradient in the northern end of the Site near Firestone Boulevard is considerably higher than the hydraulic gradient in the southern portion of the Site. Two possible explanations for the change in hydraulic gradient are (1) the transmissivity of the aquifer increases from north to south and (2) there is groundwater recharge north of the northern property boundary. At this time, there are insufficient data to determine which condition is responsible for the change in hydraulic gradient.

In summary, the water table at the Site occurs at approximately 45 fbgf. The groundwater flow direction is predominantly north to south. Therefore, the upgradient property boundary is predominantly the northern property boundary, along Firestone Boulevard.

## **IV. DISTRIBUTION OF CHEMICALS OF CONCERN**

The following sections provide an analysis of the distribution of chemicals of concern with respect to (A) soil gas, (B) soil, and (C) groundwater.

## **A. AREAL DISTRIBUTION OF TCE AND PCE IN SOIL GAS**

The concentrations of trichloroethene (TCE) and tetrachloroethene (PCE) in soil gas are summarized in Table 2. Appendix A provides copies of the soil gas data tables included in EKI (1998a). Appendix B includes the maps of TCE and PCE in soil gas prepared by EKI (1998a). Figure 6 shows the areal distribution of soil gas sampling and soil boring locations investigated by EKI (1998a). This figure indicates that EKI's investigation to determine soil sources was areally comprehensive and there was particular attention paid to the former anodizing area (Figure 1) in the southeast corner of the 5030 Firestone Boulevard property.

Figures 7 and 8 show the observed distribution of TCE and PCE in soil gas as reported by EKI (1998a). Figure 7 indicates that the highest concentrations of TCE in soil gas are below the former anodizing area, inferring that the shallow soils in this area are the most impacted by TCE. Figure 7 also indicates high concentrations of TCE soil gas along the eastern property boundary. There is no indication of a shallow soil source of TCE along the northern (upgradient) property boundary of the Site.

Figure 8 indicates that the highest concentrations of PCE in soil gas are also near the former anodizing area, inferring that the shallow soils in this area are the most impacted by PCE. As with TCE, there is no indication of a shallow soil source of PCE along the northern (upgradient) property boundary of the Site.

### **Summary**

In summary, both the TCE and PCE soil gas distributions indicate that shallow soil is impacted near the former anodizing area. Neither the TCE nor the PCE soil gas distributions indicate that shallow soil along the northern (upgradient) property boundary of the Site is impacted.

## **B. DISTRIBUTION OF TCE AND PCE IN SOIL**

The concentrations of TCE and PCE in soil are summarized in Table 3. Appendix A provides copies of the data tables included in the various reports by EKI. Appendix B includes maps of TCE and PCE in soil prepared by EKI (1998a).

Figure 9 shows the spatial distribution of TCE and PCE in soil documented by EKI (1998a, 1998b, and 1999a). Figure 9 includes the results of testing of soils from soil borings and from soils collected during the installation of monitoring wells MW-1, MW-2, MW-3, and MW-5. Figure 10 shows the vertical distribution of TCE in soil along hydrostratigraphic cross-section A-A' (EKI, 2000e).

Figures 9 and 10 indicate that there are low concentrations of TCE and PCE in soil underlying the Site. The highest of these concentrations were detected in soil boring B-4. This location coincides with the centroid of the TCE and the PCE soil gas highs near the former anodizing area (Figures 7 and 8). Although there are low levels of TCE and PCE in the soil at the Site, there are several indications that impacted soil at the Site is not the source of high TCE concentrations in groundwater beneath the Site.

EKI (1999a) reported that trichloroethylene (TCE) concentrations in groundwater at three monitoring locations (MW-1, CPT-6, and CPT-7) exceeded 25,000 micrograms per liter ( $\mu\text{g/L}$ ). According to Cohen and Mercer (1993), a concentration in groundwater of a dense non-aqueous phase liquid (DNAPL) such as TCE greater than one percent of its aqueous solubility infers that the groundwater has been impacted by DNAPL somewhere along its flow path. For TCE, this would be a concentration in groundwater greater than 11,000  $\mu\text{g/L}$ . Therefore, the observed concentrations of TCE in groundwater at the Site infer that TCE has reached the groundwater somewhere as a DNAPL. However, as we will show later, this must have occurred upgradient of the Site.

The characteristic of DNAPL movement in the subsurface are dependent upon site specific geologic and hydrogeologic conditions such as soil type, moisture content, and organic carbon content (Cohen and Mercer, 1993; Pankow and Cherry, 1996, and others). According to Cohen and Mercer (1993), the presence of chlorinated VOCs in tight soils, as found at the Site, in concentrations over 10,000 mg/kg would infer the presence of a DNAPL. However, Figure 9 shows that only two of the 78 soil samples tested exceed 10 mg/kg TCE, only one sample exceeds 20 mg/kg, and none of the samples exceed 300 mg/kg TCE. As mentioned previously, the highest concentration of TCE detected in soil was at 20 fbgl at B-4 (270 mg/kg) near the former anodizer. Therefore, none of the observed soil chemistry data infer the presence of DNAPL in the soil at the site.

Similarly, other potential source areas, such as the sumps near soil borings B9 and B10 and the furnace pit area near soil boring B11 have only low concentrations of TCE and PCE in the shallow soil (see Figures 1 and 9 for locations). These low concentrations indicate that these are unlikely sources of the observed groundwater contamination.

The same is true at the monitoring well locations where significant TCE concentrations are observed in the groundwater. Figure 9 shows that TCE concentrations in soil at monitoring wells MW-1, MW-2, MW-3, and MW-5 also exhibit the trend of low concentrations in the soil to at least 30 fbgl (the limit of testing). These data, especially at MW-2, which is located hydraulically upgradient of the suspected soil sources (based on soil gas and soil chemistry data), indicate that on-site soil is not the source of the groundwater impact.

The hydrostratigraphic conditions at the Site (Figure 4) are not conducive to the vertical migration of a DNAPL to the water table. The soil boring and CPT data indicate that a competent, continuous, two-to-five foot thick clayey unit extends across the Site at approximately 25 fbgl. The clayey unit is described in the borehole logs as highly plastic, soft to firm, and moist (EKI, 1998b and 1999a). Above the clayey unit is almost 15 feet of moist to wet sandy silt to silty clay. These soils would slow any potential downward movement of chemicals

to the water table due to their low hydraulic conductivity. Even if there had been DNAPLs at the site, they would have had to accumulate above the clayey unit until a sufficient head of DNAPL developed before they could penetrate the clayey unit (Cohen and Mercer, 1993). None of the 78 soil samples indicate that this happened.

Figure 10 shows that TCE and PCE concentrations in the soil are generally low above the clayey unit (at about 25 fbgl). Below the clayey unit, concentrations increase toward the water table (although not nearly high enough to produce the observed groundwater concentrations). The data from soil borings B-15 and B-17 are good examples of this trend. These data suggest that TCE in soil just above the water table is due to the impacted groundwater (off-gassing or smear zone) and not the overlying soil.

### Summary

In summary, the 78 soil samples collected from the Site indicate only low concentrations of TCE and PCE. The observed concentrations are not high enough nor are they in locations that would explain the distribution of chemicals in the groundwater. In fact, it appears that observed TCE and PCE concentrations in the deep soils near the water table originate from the groundwater, not from the overlying soil. Therefore, the TCE and PCE observed in the groundwater must be due to an upgradient, off-site source.

## **C. DISTRIBUTION OF TCE AND OTHER CHEMICALS IN GROUNDWATER**

The concentrations of VOCs detected in groundwater are summarized in Tables 4 and 5. Appendix A provides copies of the groundwater chemistry data tables included in the various reports by EKI. Appendix B includes maps of TCE and PCE in groundwater prepared by EKI (2000e).

Figure 11 shows the distribution of TCE in groundwater at the monitoring wells during September 2000 (EKI, 2000). Similar to this map, Figure 12 shows the distribution of TCE in groundwater during October/November 1998. The most complete representation of the distribution of TCE in groundwater is the data collected during the October/November 1998 sampling event. CPT data were only collected during the October 1998 sampling event. The CPT samples provide critical groundwater data in areas not covered by the monitoring wells. The availability of the CPT groundwater sample data from October 1998 provides additional data to assess the areal distribution of TCE in groundwater during the autumn of 1998.

Since Figures 11 and 12 indicate similar distributions and magnitudes of TCE concentrations in groundwater at the monitoring wells, it is reasonable to assume that the areal distribution of TCE shown in the October/November 1998 data (Figure 12) is representative for other monitoring periods. For this purpose, the distributions of chemicals in groundwater during October/November 1998 are used to evaluate the source of chemicals in groundwater in this report.

Figures 12 through 16 are concentration contour maps that show the areal distributions of TCE, PCE, 1,1-DCE, 1,1-DCA, and cis 1, 2-DCE in groundwater beneath the Site in October/November 1998. Figures 12 through 16 provide a general indication of the exact distribution of groundwater chemistry at the Site. As with any groundwater chemistry data considered in any hydrogeological investigation, the exact distributions of the chemicals in groundwater at the Site cannot be determined.

The contours in Figures 12 through 16 were drawn using (1) linear interpolation between known data points, (2) dashed contours where additional hydrogeologic information supplemented linear interpolation (explanations are provided for dashed contours where used), (3) the data from the monitoring well where both data from the upper few feet (the CPT samples) and from the upper 30 feet (the monitoring well samples) of the saturated zone were available (for example, at MW-5 and CPT-5), and (4) groundwater chemistry data from October 1998 (CPT PIPP samples) and November 1998 (monitoring well samples).

### Distribution of TCE in Groundwater

Figure 12 shows the areal distribution of TCE in groundwater beneath the Site in October/November 1998. A dashed contour for the 30,000  $\mu\text{g/L}$  contour north of CPT-6 was used because the data indicate that TCE originates from an off-site source located upgradient (north) of the Site. The location and non-closure of the 30,000  $\mu\text{g/L}$  contour in Figure 12 are consistent with the 10,000 and 20,000  $\mu\text{g/L}$  contours, which do not close in the upgradient (north) direction.

We surmise that the TCE in groundwater originated off site because:

1. There is a high TCE concentration in groundwater at MW-2, which is located on the upgradient property boundary. However, the soil gas and soil chemistry data (Figures 7 and 9) show no detectable TCE in the soil at MW-2.
2. Similarly, there are high TCE concentrations in groundwater at CPT-6 and CPT-7. However, the soil (B-5, B-10, and B-15 near CPT-6 and B-9 near CPT-7) and the soil gas data show no indication of substantial TCE in soil at these locations. Although these locations are not on the upgradient property boundary, they are located hydraulically upgradient from the highest soil gas concentrations (Figures 7 and 8) and from the highest concentrations of TCE in the soil (Figure 9).
3. None of the on-site soil chemistry data can explain the high concentrations of TCE observed in the groundwater. As mentioned earlier in the section on soil chemistry, the high TCE concentrations in groundwater at MW-1, CPT-6, and CPT-7 ( $>25,000 \mu\text{g/L}$ ) infer that DNAPL is impacting the groundwater somewhere. However, none of the 78 soil samples collected at the Site have TCE concentrations that would infer the presence of DNAPL (77 of the 78 samples have less than 20 mg/kg, all are less than 300 mg/kg; versus greater than 10,000 mg/kg to infer DNAPL).



### Distribution of PCE in Groundwater

Figure 13 shows the areal distribution of PCE in groundwater beneath the Site in October/November 1998. Dashed contours were used for the 100- $\mu\text{g/L}$  contour north and northwest of CPT-6. Accordingly, this contour north of CPT-6 is not closed because of the uncertainty of the PCE concentration at CPT-7 (elevated detection limit).

PCE was detected in groundwater only at CPT-6 and MW-1. Elevated detection limits were also reported at MW-2, MW-3, MW-5, and CPT-7 locations where high TCE concentrations were reported.

### Distribution of 1,1-DCE in Groundwater

Figure 14 shows the areal distribution of 1,1-DCE in groundwater beneath the Site in October/November 1998. 1,1-DCE can be a breakdown product of several VOCs including PCE, TCE, 1,1,1-TCA, and 1,1-DCA (Dragun, 1998).

The highest concentrations of 1,1-DCE were observed at MW-1 and CPT-7. The 1,1-DCE plume is wide, extending from at least MW-2 in the northwest to at least MW-5 in the southeast. 1,1-DCE was detected in groundwater at MW-2, which is on the upgradient property boundary. However, there was no detectable 1,1-DCE in soil at monitoring well MW-2 down to the limit of testing at approximately 30 fbg. Furthermore, there were no detections of 1,1-DCE in any of the 78 soil samples collected from the Site.

### Distribution of 1,1-DCA in Groundwater

Figure 15 shows the areal distribution of 1,1-DCA in groundwater beneath the Site in October/November 1998. 1,1-DCA can be a breakdown product of several VOCs including PCE, TCE, 1,1,1-TCA, and 1,1-DCE (Dragun, 1998 and Pankow and Cherry, 1996).

A dashed contour for the 200  $\mu\text{g/L}$  contour north of CPT-6 was used because it is suspected that 1,1-DCA originated from an off-site source located upgradient (north) of the Site. The location and non-closure of the 200  $\mu\text{g/L}$  contour are consistent with the 100  $\mu\text{g/L}$  contour, which does not close in the upgradient (north) direction.

We surmise that the 1,1-DCA originated off site because:

1. 1,1-DCA was detected in groundwater at MW-2, which is located on an upgradient property boundary. However, the soil chemistry data at MW-2 indicate no detectable 1,1-DCA or parent compound in the soil at MW-2.
2. Similarly, there are (1) high 1,1-DCA concentrations in groundwater at CPT-6 and CPT-7, (2) detections in groundwater at CPT-8, CPT-4 and MW-3, and (3) elevated detection

levels at MW-1, MW-5, and CPT-5. However, the soil chemistry data at B-5, B-10, and B-15 near CPT-6 and B-9 near CPT-7 indicate no detectable 1,1-DCA. In fact, the soil chemistry data show no detections of 1,1-DCA in any of the 78 soil samples.

#### Distribution of cis 1,2-DCE in Groundwater

Figure 16 shows the areal distribution of cis 1,2-DCE in groundwater beneath the Site in October/November 1998. This chemical can be a breakdown product of several VOCs including PCE, TCE, and 1,2-DCA (Dragun, 1998).

The general distribution of cis 1,2-DCE appears to be different from those of TCE, PCE, 1,1-DCE, and 1,1-DCA. The highest observed concentration of cis 1,2-DCE was at MW-5, which is located along the eastern property boundary. There was no cis 1,2-DCE detected in soil at MW-5. The only VOC detected in soil at MW-5 was TCE at 550 µg/kg at 41 fbgl near the water table. TCE was not detected in either of the soil samples collected from 21 fbgl or 31 fbgl at MW-5.

#### Summary

In summary, the distribution of chemicals in groundwater cannot be accounted for by the observed distribution of chemicals in soil and the observed groundwater flow direction. For example, the high concentrations of TCE in groundwater along the upgradient property boundary at MW-2 cannot be explained by the observed distribution of chemicals in the soil at MW-2 or by other on-site locations in view of the observed groundwater flow direction. Rather, the observed distribution of chemicals in the soil and the groundwater flow directions indicate an upgradient and off-site source. Similarly, the very high concentrations of TCE at CPT-6 cannot be explained by the observed concentrations of TCE in soil near CPT-6 or by other on-site locations in view of the observed groundwater flow direction. Rather, the observed distribution of chemicals in soil and groundwater flow directions indicates an upgradient and off-site source.

### **V. TCE/PCE FINGERPRINT**

The ratio of TCE to PCE in the Site soils is strikingly different from that in the groundwater. This further supports that an off-site, rather than an on-site source has impacted the groundwater. The following section discusses the TCE/PCE ratio in the soil gas, soil, and groundwater.

Table 2 summarizes the TCE and PCE concentrations observed in the soil gas at the Site. Table 2 shows that the TCE to PCE ratio in soil gas ranges from about 0.1 to 2.5 for 34 of 37 soil gas sampling locations. At the three other locations, which are adjacent to the eastern property boundary (SG-35 to SG-37; Figures 7 and 8), the TCE to PCE ratio ranges from about 2 to 8.5.

In summary, the soil gas data indicate that the shallow impacted soil can be characterized by a TCE to PCE ratio of less than about 2.5:1.

Table 3 summarizes the TCE and PCE concentrations observed in the soil at the Site. Table 3 shows that the TCE/PCE ratio in soil samples collected from above the clayey unit at about 25 fbg1 is generally about 1:1. The soil sample with the highest observed concentrations of TCE and PCE (soil boring B4 at 20.5 feet) had a TCE/PCE ratio of about 2:1. Table 3 shows that below the clay unit, the TCE/PCE ratio increases.

Tables 4 and 5 summarize the TCE/PCE ratios in groundwater and Figure 17 shows the TCE/PCE ratio in groundwater during October/November 1998. Figure 17 shows that the TCE/PCE ratio in the central area of the groundwater plume is on the order of 150 to 300:1. For example, at CPT-6, the TCE/PCE ratio during October/November 1998 was 318:1. At MW-1, the ratio was 165:1. Table 4 shows that similar ratios were observed during other monitoring events.

Table 3 indicates that some of the TCE/PCE ratios in the soils near the water table approach the ratios of the groundwater. It is our opinion the TCE/PCE ratios for the soils near the water table indicate that these soils have been impacted by chemicals in the groundwater. This opinion is further supported by the observation that the soils near the water table do not contain sufficient TCE or PCE to explain the concentrations observed in the groundwater.

### Summary

In summary, the observed ratios of TCE and PCE in soil gas and soil are distinctly different from that of the impacted groundwater beneath the Site. The soil gas and soil data indicate that the ratio of TCE to PCE in the soils above the clayey unit are generally about 2.5:1. However, the TCE to PCE ratio in the central area of the groundwater plume is on the order of 150 to 300:1. The TCE to PCE ratios of the impacted soil near the water table indicate that chemicals in groundwater, rather than chemicals from the shallow soils, have impacted soils.

## **VI. CONCLUSION**

It is our professional opinion that the groundwater beneath the Jervis B. Webb Company of California property located at 5030 Firestone Boulevard, South Gate, California has been substantially impacted by an off-site source, not by on-site activities. There are three main bases for our opinion, including:

1. The observed groundwater flow direction in the uppermost aquifer at the Site has consistently been from north to south during the period of observation. This means that the upgradient property boundary is along Firestone Boulevard. VOCs such as TCE have

been detected in the groundwater at MW-2, which is located on the upgradient property boundary. Since the soil gas and soil chemistry data indicate that there is no detectable TCE in the soil at MW-2, the TCE in the groundwater must have originated from an upgradient and off-site source.

2. Concentrations of TCE exceeding 25,000 µg/L have been reported in the groundwater at MW-1, CPT-6, and CPT-7. These high concentrations of TCE infer that DNAPL has impacted the groundwater somewhere along its flow path. However, the concentrations of TCE observed in soil are magnitudes lower than would be necessary to infer the presence of DNAPL in the soil. Therefore, the observed soil concentrations of TCE are not high enough to explain the observed groundwater concentrations of TCE. Furthermore, the continuous clayey unit encountered at about 25 fbgl would inhibit the vertical migration of DNAPL to the water table, which is located at approximately 45 fbgl. No soil chemistry data indicate that DNAPL has accumulated above the clayey unit at the Site.
3. The ratios of TCE to PCE in the soil gas and soil are similar to each other; however, they are strikingly different from the TCE to PCE ratio in the groundwater. This indicates that the TCE and PCE in the soil have not caused the TCE and PCE impact in the groundwater.

It is also our professional opinion that the impacted soil below the clayey unit at about 25 fbgl has been impacted by the groundwater and not by a surface release of chemicals at the Site. There are three main bases for our opinion, including:

1. As mentioned previously, the observed concentrations of VOCs in the soils are not high enough to be the source of the groundwater contamination.
2. The TCE/PCE ratio in the deeper soils is much more similar to that of the impacted groundwater than to that of the soil above the clayey unit.
3. The clayey unit at 25 fbgl would restrict the downward migration of chemicals from above 25 fbgl.

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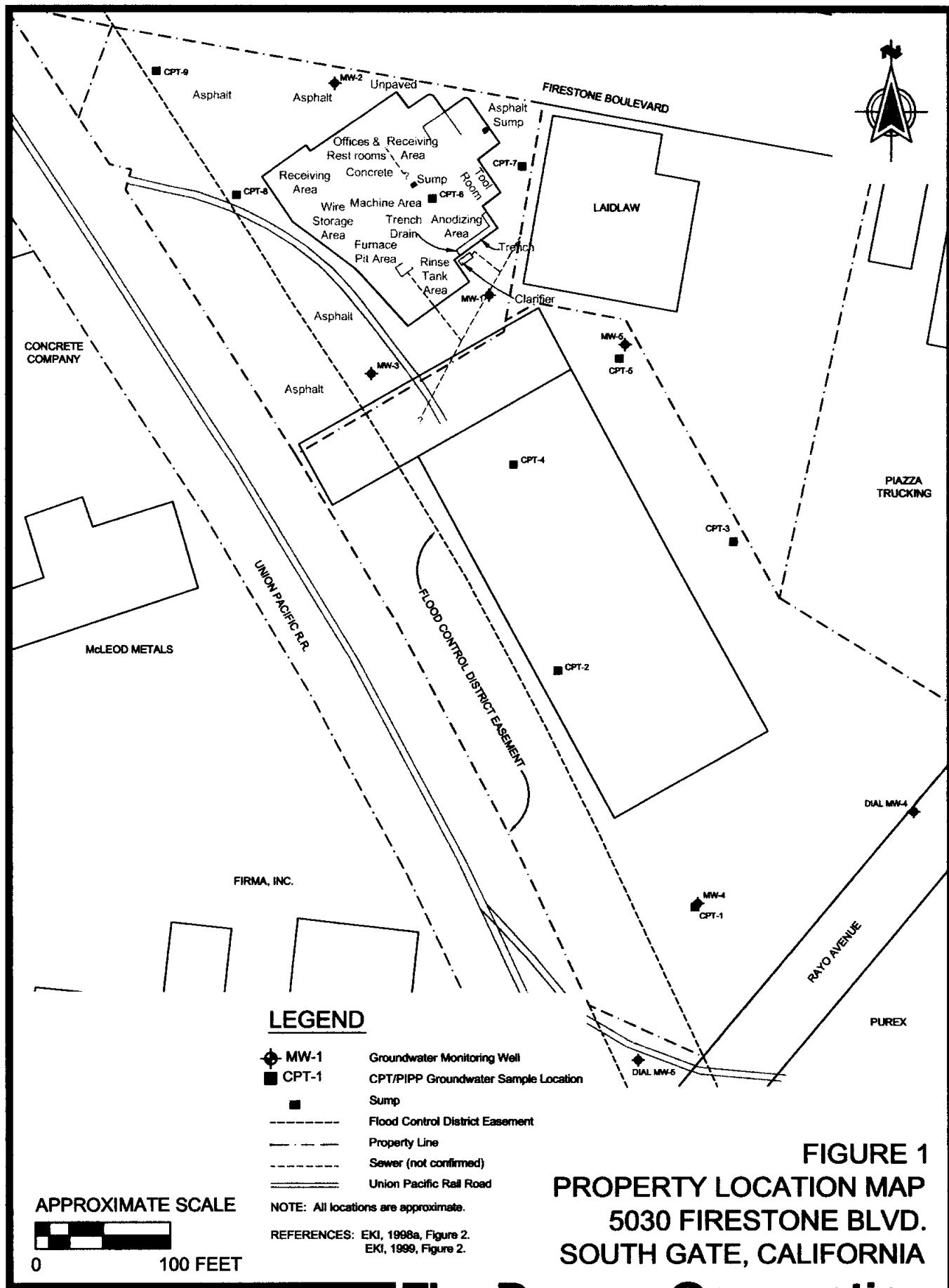
## REFERENCES (CONT'D)

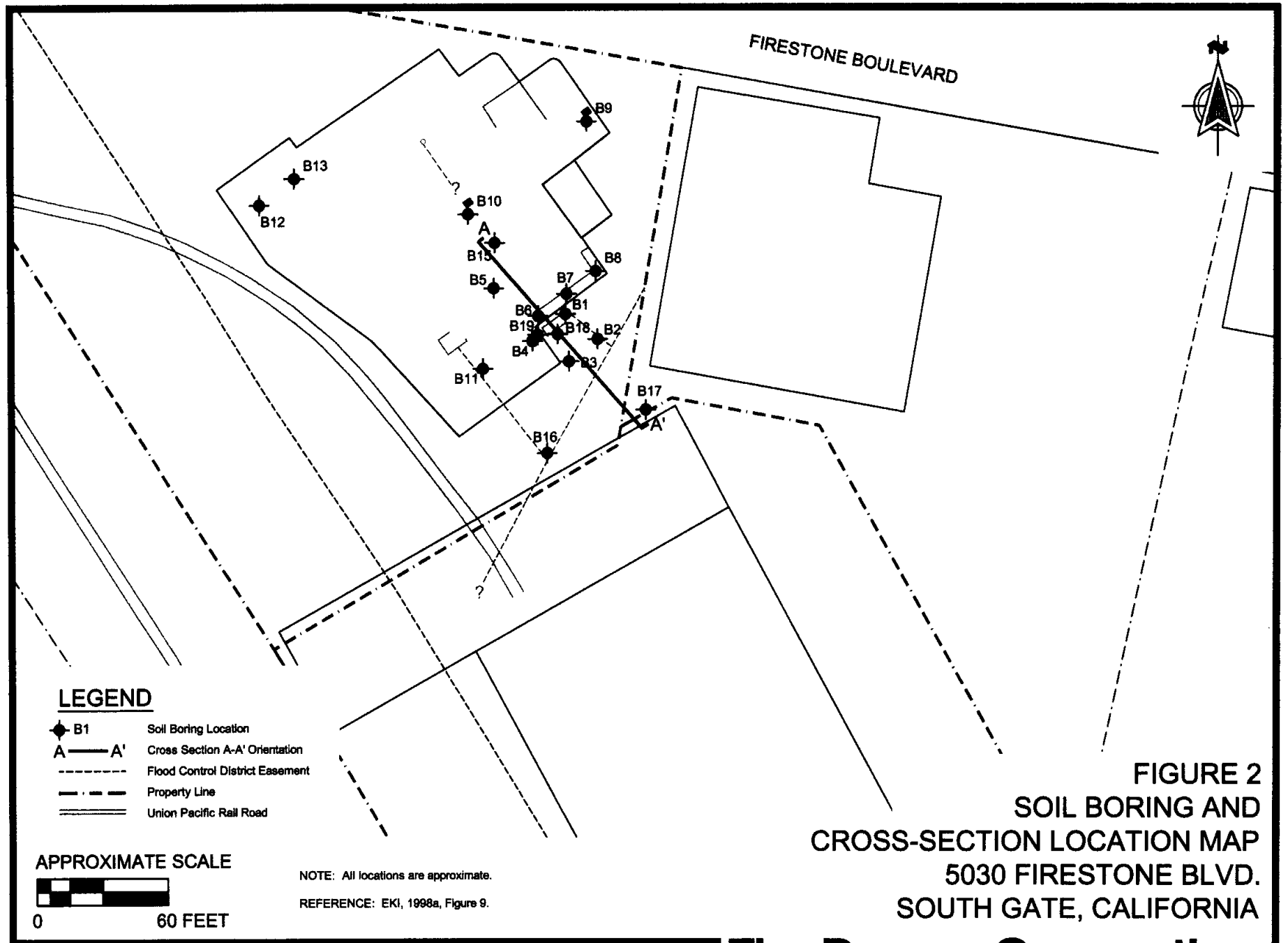
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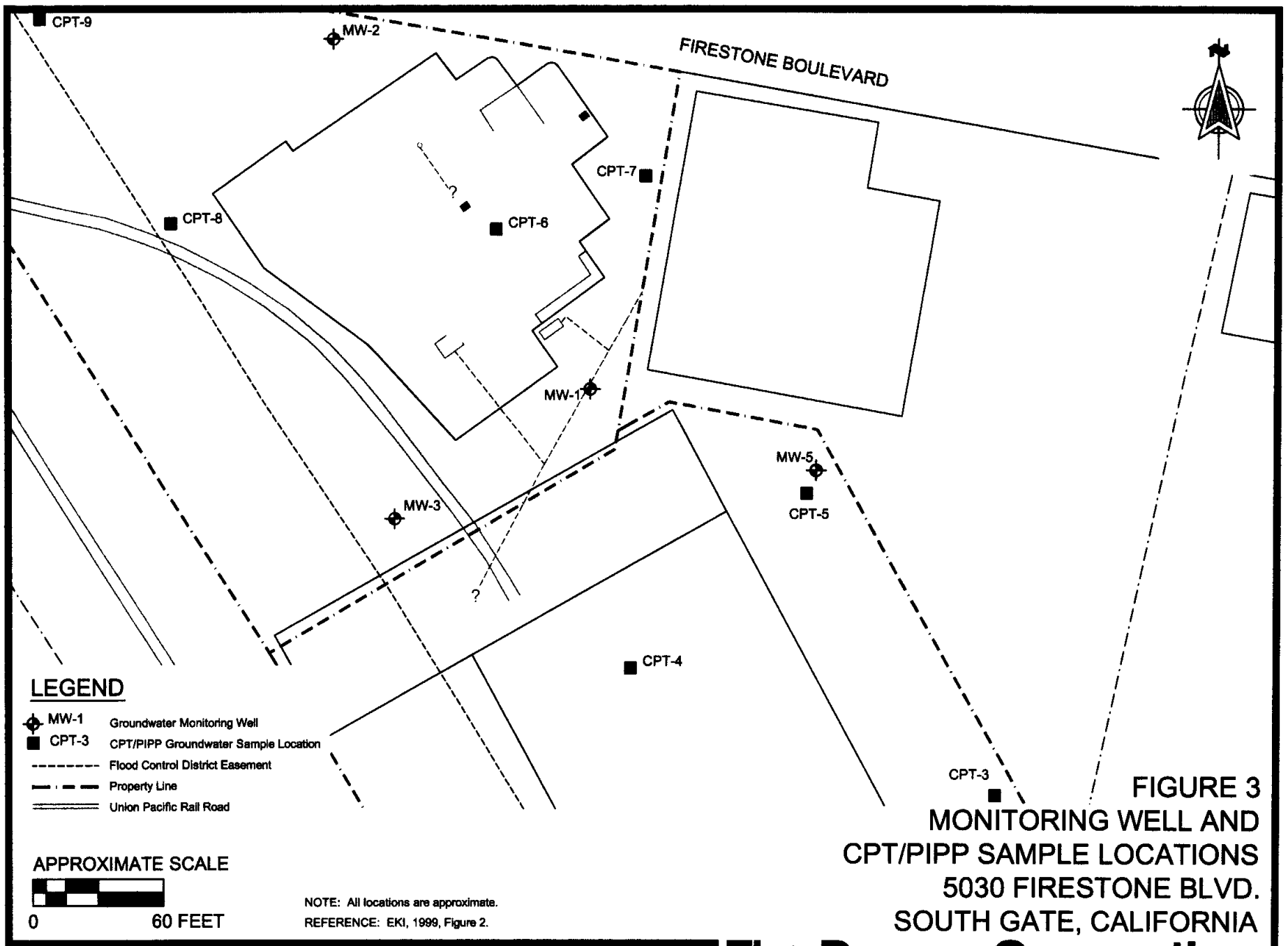
## **FIGURES**







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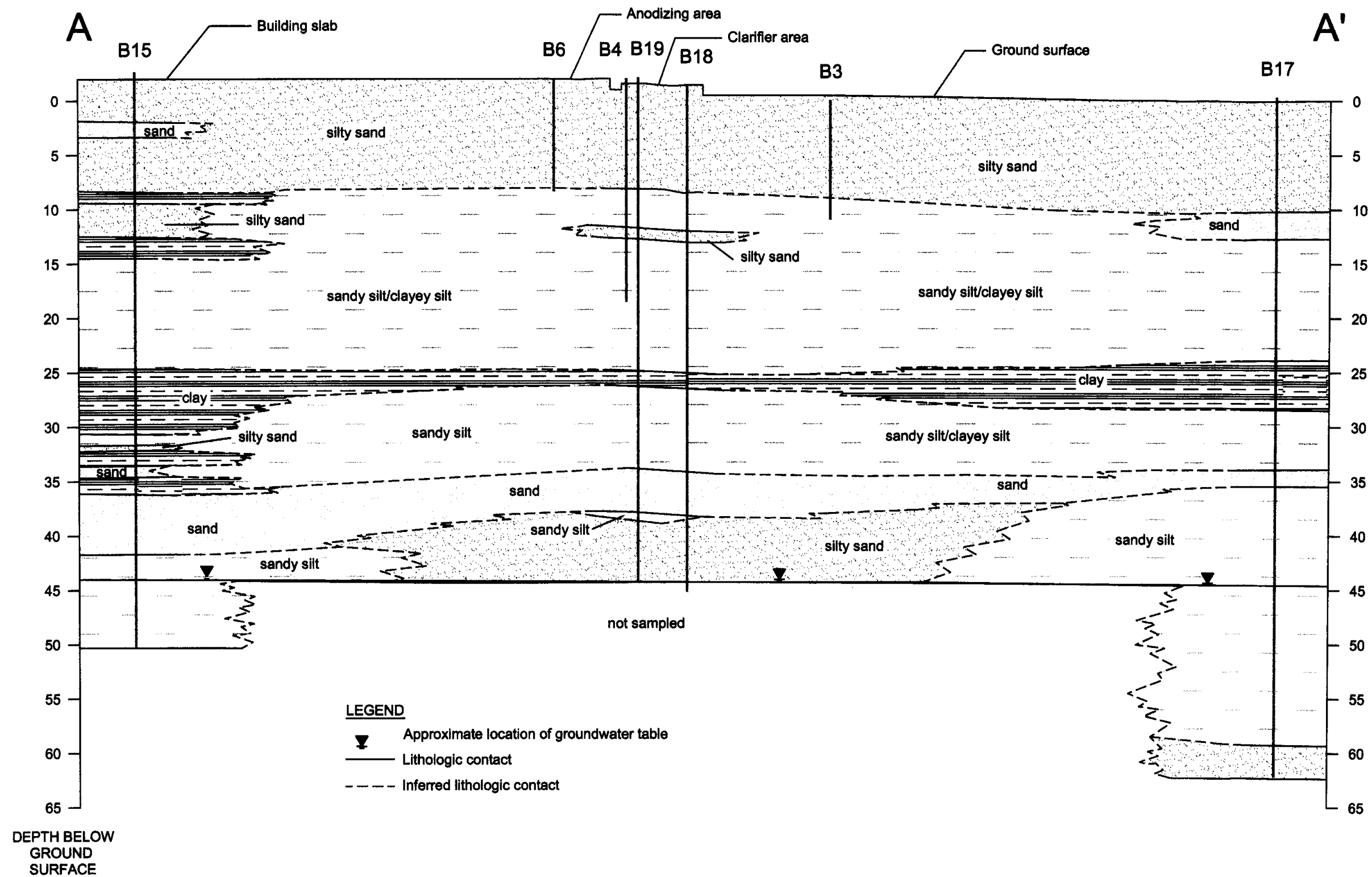
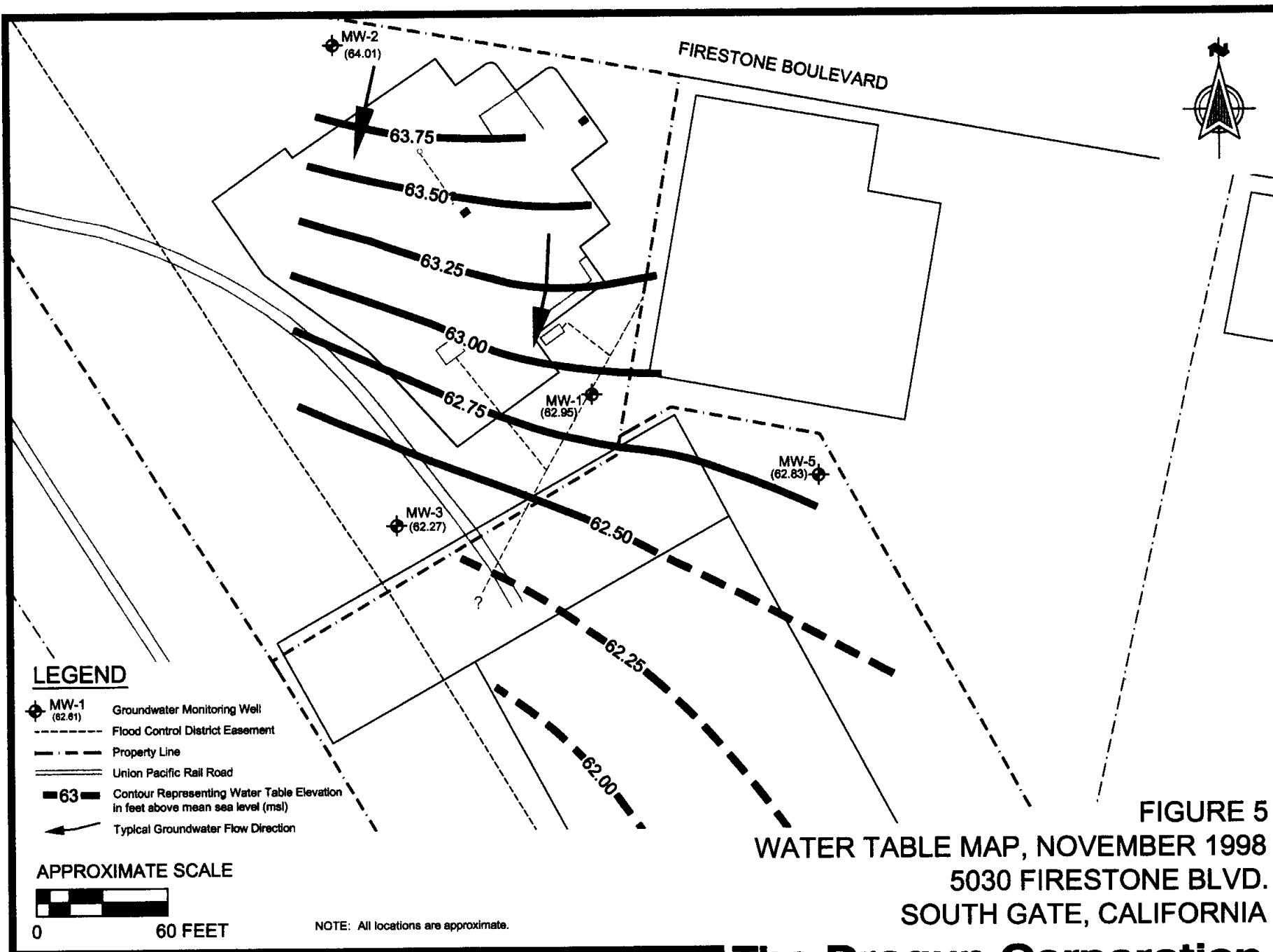
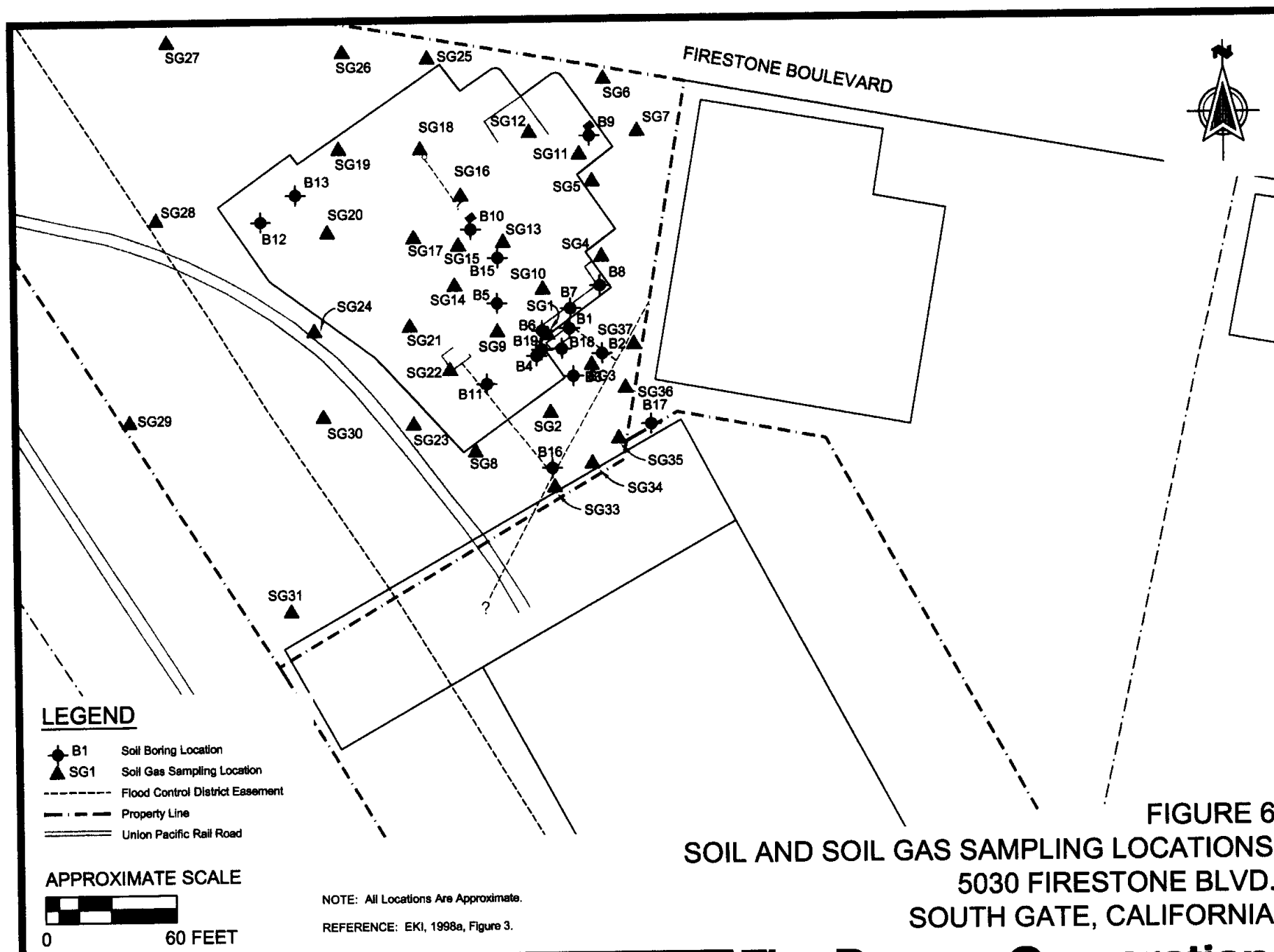


FIGURE 4  
HYDROSTRATIGRAPHIC CROSS-SECTION A-A'  
5030 FIRESTONE BLVD.  
SOUTH GATE, CALIFORNIA

**The Dragun Corporation**

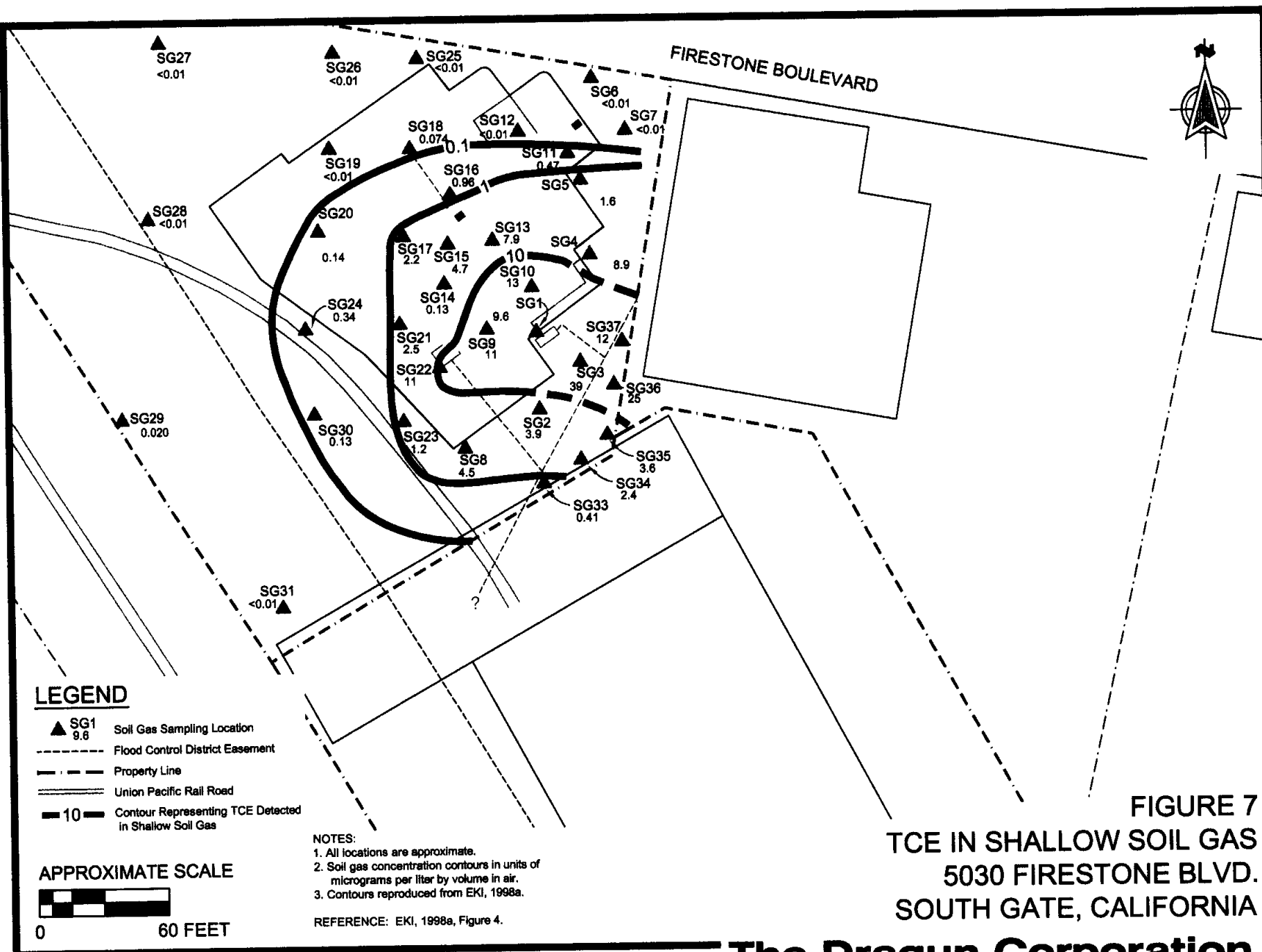


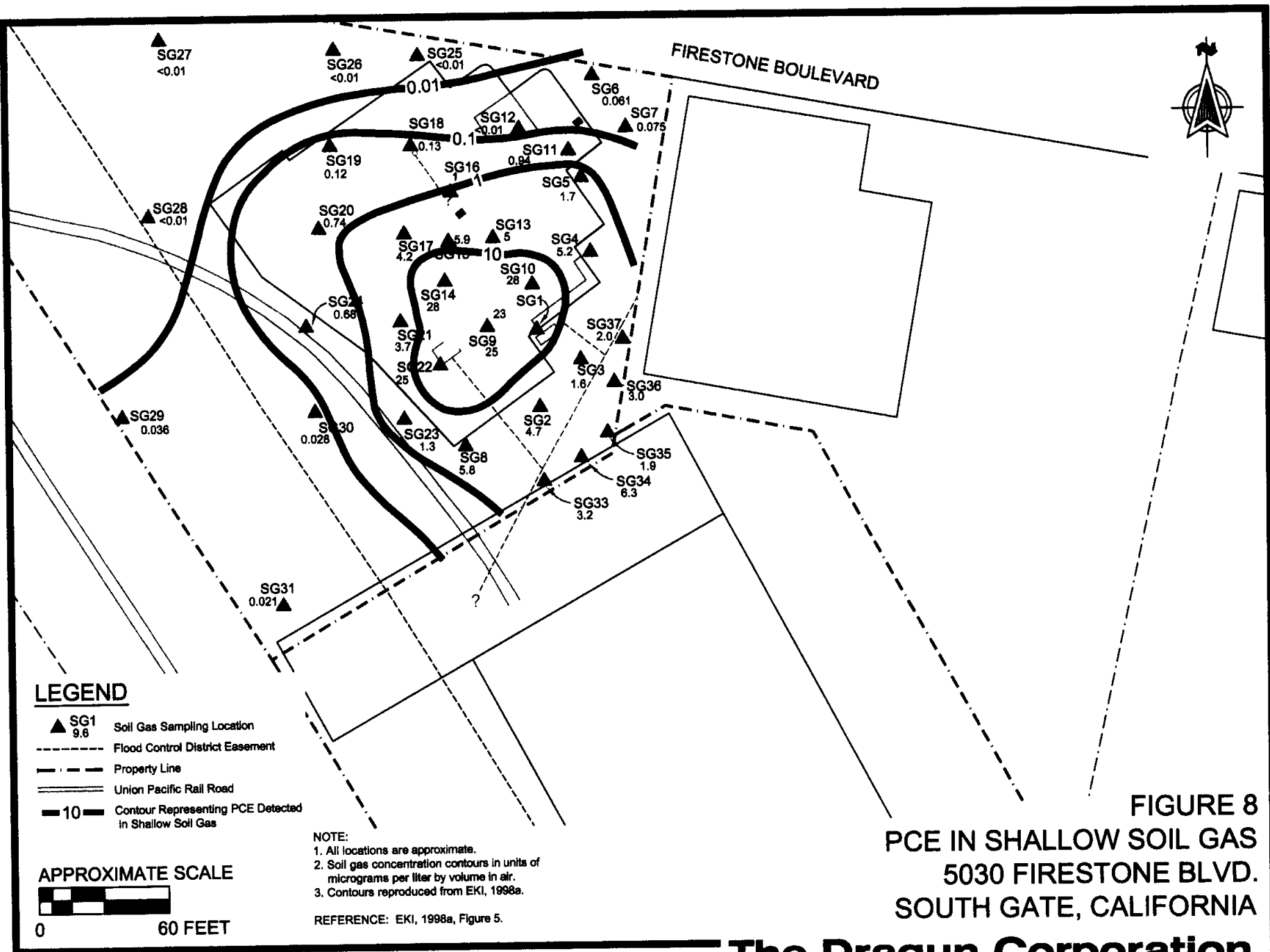
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**FIGURE 6**  
**SOIL AND SOIL GAS SAMPLING LOCATIONS**  
**5030 FIRESTONE BLVD.**  
**SOUTH GATE, CALIFORNIA**

**The Dragoon Corporation**







B2-5.5	5.5 Feet	TCE=0.007	PCE=0.018
B9-10.5	10.5 Feet	TCE=ND	PCE=0.045

MW-1	10.5 Feet	TCE=0.018	PCE=0.021
MW-1	20.5 Feet	TCE=0.082	PCE=0.023
MW-1	30.5 Feet	TCE=0.080	PCE=0.011

MW-2	10.5 Feet	TCE=<0.005	PCE=<0.005
MW-2	20.5 Feet	TCE=<0.005	PCE=<0.005
MW-2	30.5 Feet	TCE=<0.005	PCE=<0.005

MW-3	11 Feet	TCE=<0.005	PCE=<0.005
MW-3	20.5 Feet	TCE=<0.005	PCE=<0.005
MW-3	30.5 Feet	TCE=<0.005	PCE=<0.005

MW-5	21 Feet	TCE=0.022	PCE=<0.0025
MW-5	31 Feet	TCE=0.011	PCE=<0.0025
MW-5	41 Feet	TCE=0.55	PCE=<0.050

B15-10	10 Feet	TCE=ND	PCE=ND
B15-16	16 Feet	TCE=ND	PCE=ND
B15-20.5	20.5 Feet	TCE=ND	PCE=ND
B15-26.5	26.5 Feet	TCE=0.38	PCE=0.054
B15-31	31 Feet	TCE=0.52	PCE=0.041
B15-35.5	35.5 Feet	TCE=0.14	PCE=0.026
B15-40	40 Feet	TCE=1.2	PCE=ND
B15-44.5	44.5 Feet	TCE=1.3	PCE=ND

B3-6	6 Feet	TCE=0.010	PCE=0.042
B3-11	11 Feet	TCE=0.034	PCE=0.12

B4-6	6 Feet	TCE=0.021	PCE=0.076
B4-16	16 Feet	TCE=0.082	PCE=2.2
B4-20.5	20.5 Feet	TCE=270	PCE=140

B5-6	6 Feet	TCE=0.005	PCE=0.025
B5-10.5	10.5 Feet	TCE=0.19	PCE=0.085

B6-6	6 Feet	TCE=0.031	PCE=0.13
B6-10.5	10.5 Feet	TCE=0.025	PCE=0.019

B7-6	6 Feet	TCE=0.019	PCE=0.055
B7-11	11 Feet	TCE=ND	PCE=ND

B8-6	6 Feet	TCE=ND	PCE=0.003
B8-11	11 Feet	TCE=0.050	PCE=0.041

B9-5.5	5.5 Feet	TCE=ND	PCE=0.004
B9-10.5	10.5 Feet	TCE=0.041	PCE=0.022

B10-6	6 Feet	TCE=0.006	PCE=0.027
B10-11	11 Feet	TCE=0.036	PCE=ND

B11-6	6 Feet	TCE=0.016	PCE=0.061
B11-11	11 Feet	TCE=0.035	PCE=ND

B12-6	6 Feet	TCE=ND	PCE=ND
-------	--------	--------	--------

B13-6	6 Feet	TCE=ND	PCE=ND
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## LEGEND

- ⊕ MW-1 Groundwater Monitoring Well
- B1 Soil Boring Location
- Flood Control District Easement
- - - Property Line
- ==== Union Pacific Rail Road

- NOTES:
1. All locations are approximate.
  2. PCE = tetrachloroethene.
  3. TCE = trichloroethene
  4. ND = not detected above method detection limit.
  5. Soil concentrations reported in mg/kg.
  6. Sample depths reported in feet below ground surface.

- REFERENCES:
1. EKI, 1998a, Figures 7 & 8.  
(Samples Designated B2 Through B19 Collected During Phase II Soil Investigation).
  2. EKI, 1998b, Table 2.  
(Samples Designated MW-1 Through MW-3 Collected During Phase II Groundwater Investigation).
  3. EKI, 1999, Table 2.  
(Sample Designated MW-5 Collected During Additional Groundwater Investigation).

B16-6	6 Feet	TCE=ND	PCE=ND
B16-11	11 Feet	TCE=ND	PCE=ND
B16-16	16 Feet	TCE=ND	PCE=0.027
B16-21	21 Feet	TCE=ND	PCE=0.041
B16-26	26 Feet	TCE=ND	PCE=0.047
B16-31	31 Feet	TCE=ND	PCE=0.027
B16-35.5	35.5 Feet	TCE=ND	PCE=ND
B16-41	41 Feet	TCE=0.41	PCE=ND
B16-46	46 Feet	TCE=0.39	PCE=ND
B16-51	51 Feet	TCE=1.3	PCE=ND

B17-6	6 Feet	TCE=ND	PCE=ND
B17-11	11 Feet	TCE=ND	PCE=ND
B17-16	16 Feet	TCE=ND	PCE=ND
B17-21	21 Feet	TCE=ND	PCE=ND
B17-26	26 Feet	TCE=0.048	PCE=ND
B17-31.5	31.5 Feet	TCE=0.056	PCE=ND
B17-36	36 Feet	TCE=1.4	PCE=ND
B17-41	41 Feet	TCE=1.2	PCE=ND
B17-46	46 Feet	TCE=1.8	PCE=ND
B17-53.5	53.5 Feet	TCE=1.4	PCE=ND

B18-11	11 Feet	TCE=0.11	PCE=0.40
B18-16	16 Feet	TCE=0.61	PCE=0.37
B18-21	21 Feet	TCE=16	PCE=0.66
B18-27	27 Feet	TCE=0.75	PCE=0.083
B18-31	31 Feet	TCE=2.0	PCE=0.14
B18-36	36 Feet	TCE=0.056	PCE=ND
B18-41	41 Feet	TCE=2.3	PCE=0.091
B18-46	46 Feet	TCE=8.7	PCE=0.18

B19-16	16 Feet	TCE=0.20	PCE=0.42
B19-21	21 Feet	TCE=1.8	PCE=0.28
B19-26	26 Feet	TCE=1.5	PCE=0.28
B19-31	31 Feet	TCE=1.2	PCE=0.25
B19-36.5	36.5 Feet	TCE=0.11	PCE=ND
B19-41	41 Feet	TCE=4.0	PCE=0.16
B19-46	46 Feet	TCE=4.3	PCE=0.16

APPROXIMATE SCALE



**FIGURE 9**  
**TCE AND PCE IN SOIL**  
**5030 FIRESTONE BLVD.**  
**SOUTH GATE, CALIFORNIA**

**The Dragon Corporation**

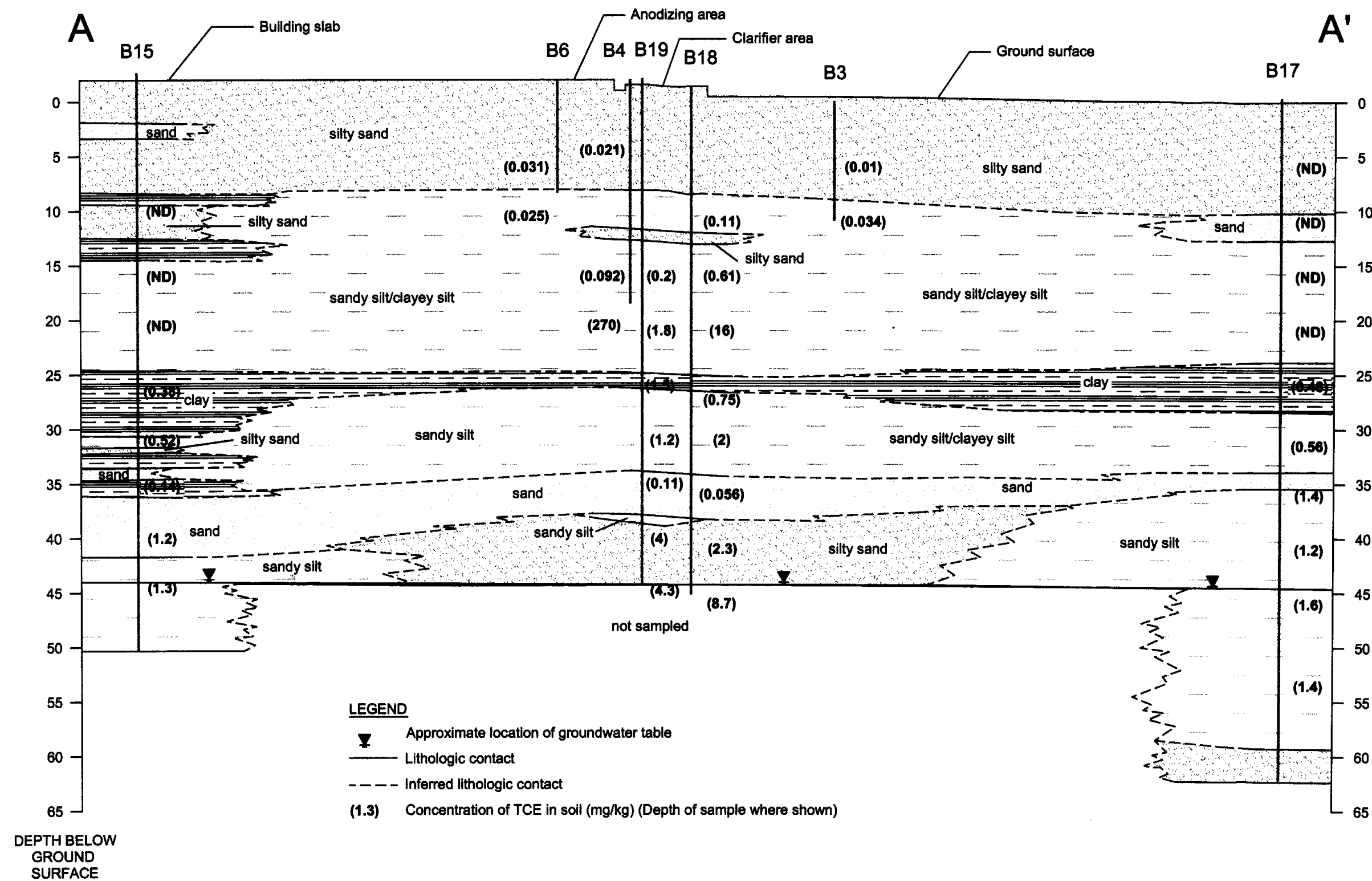


FIGURE 10  
VERTICAL DISTRIBUTION OF TCE IN SOIL  
5030 FIRESTONE BLVD.  
SOUTH GATE, CALIFORNIA

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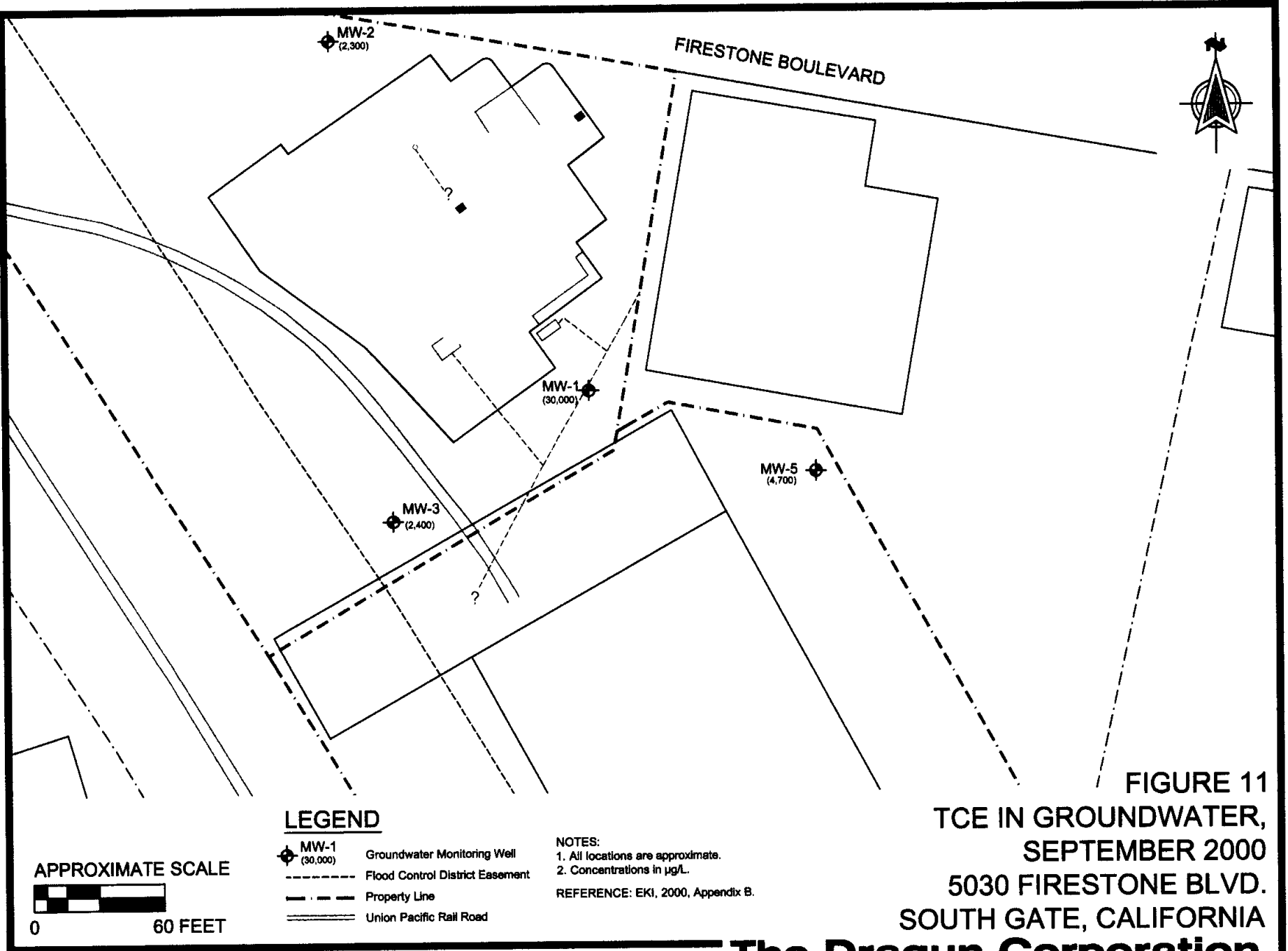
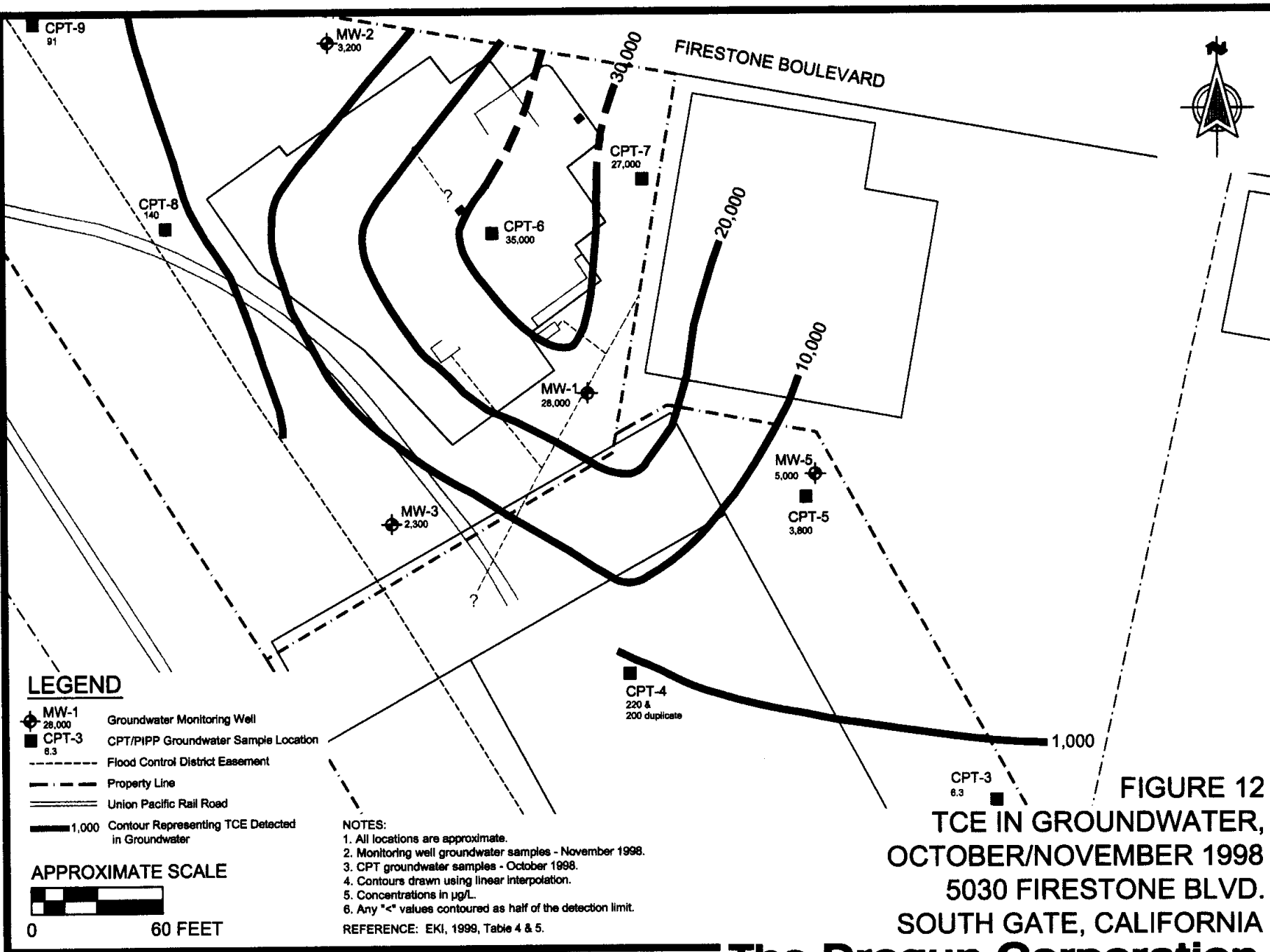
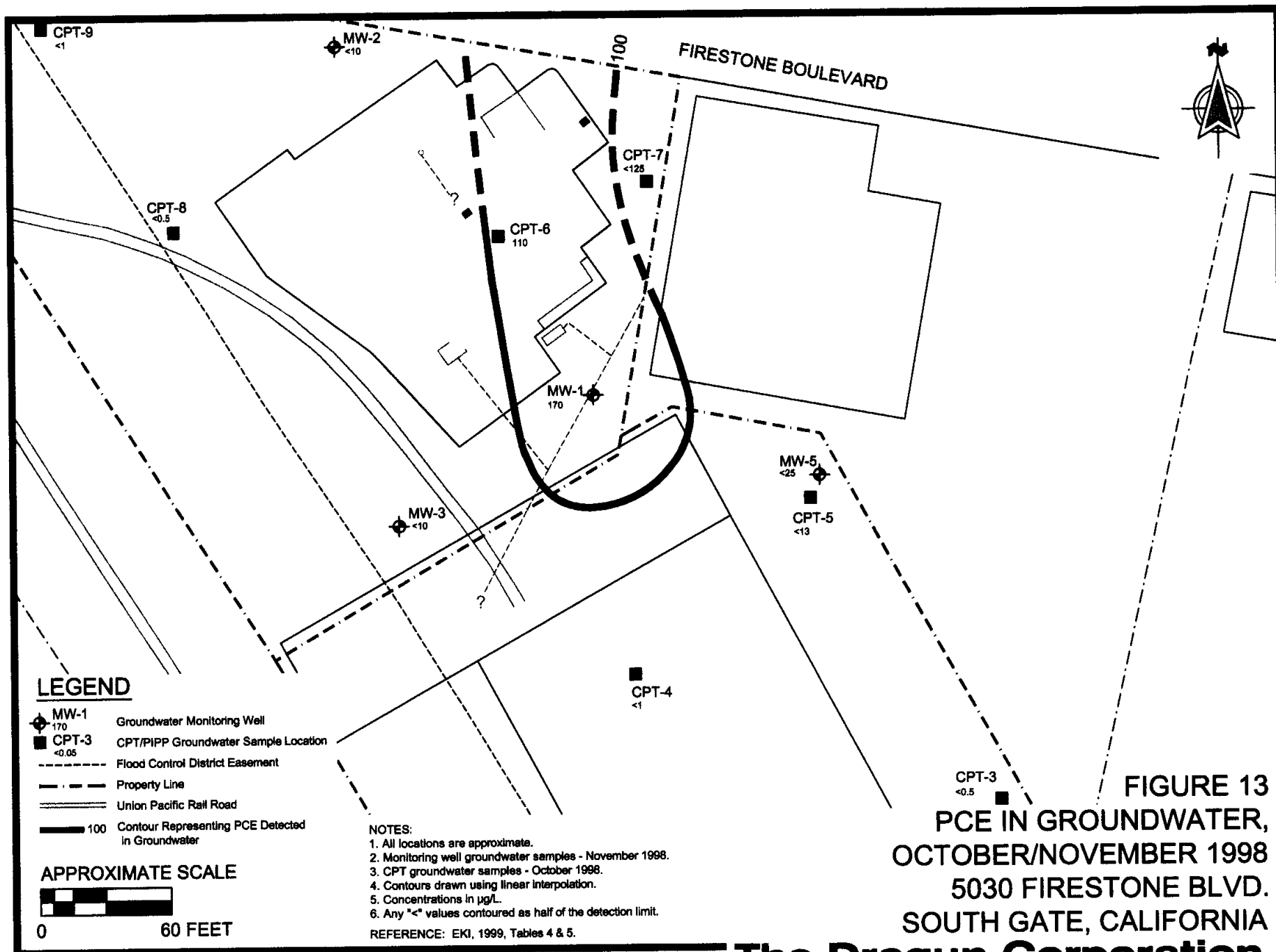


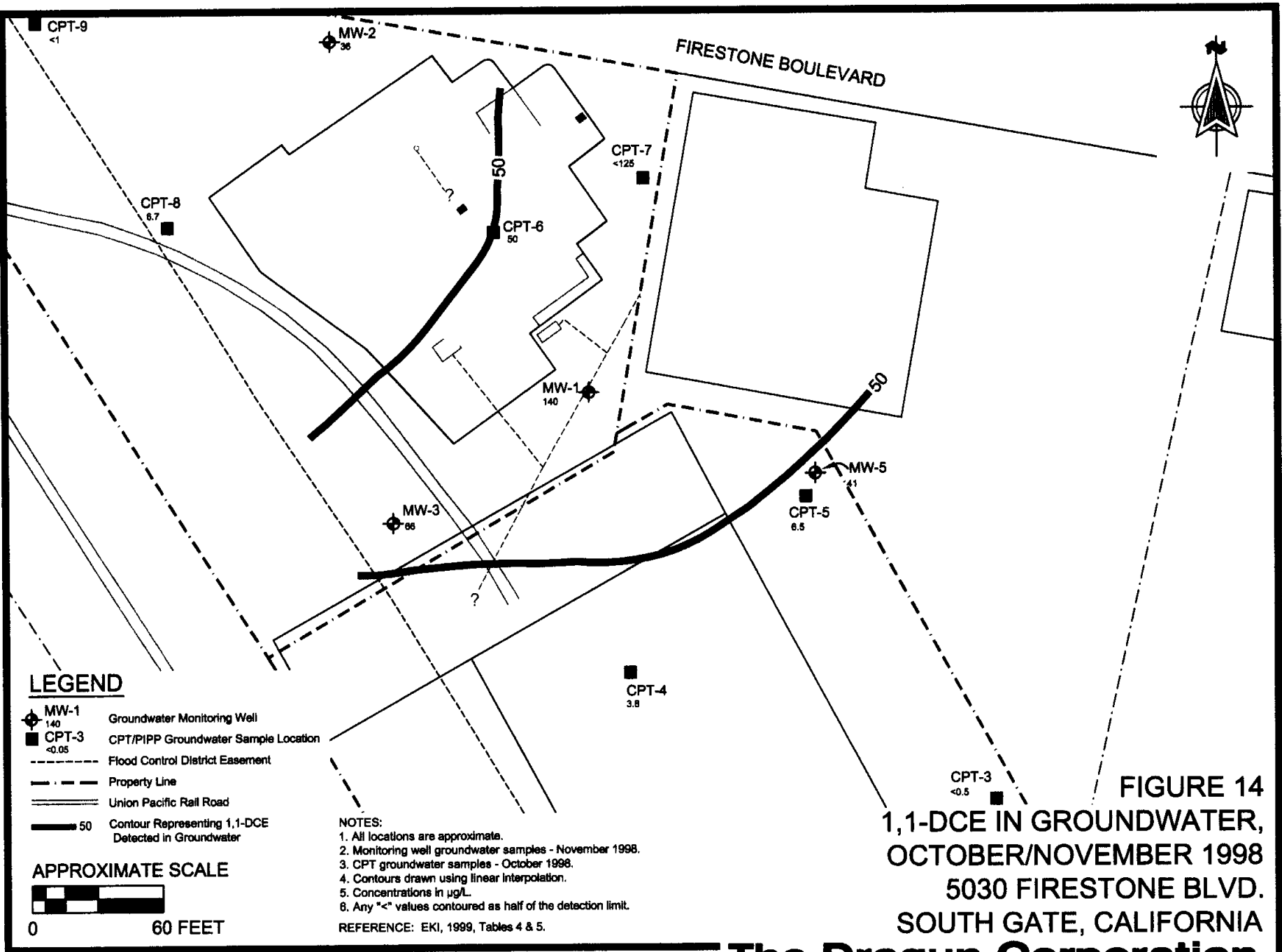
FIGURE 11  
TCE IN GROUNDWATER,  
SEPTEMBER 2000  
5030 FIRESTONE BLVD.  
SOUTH GATE, CALIFORNIA

**The Dragon Corporation**

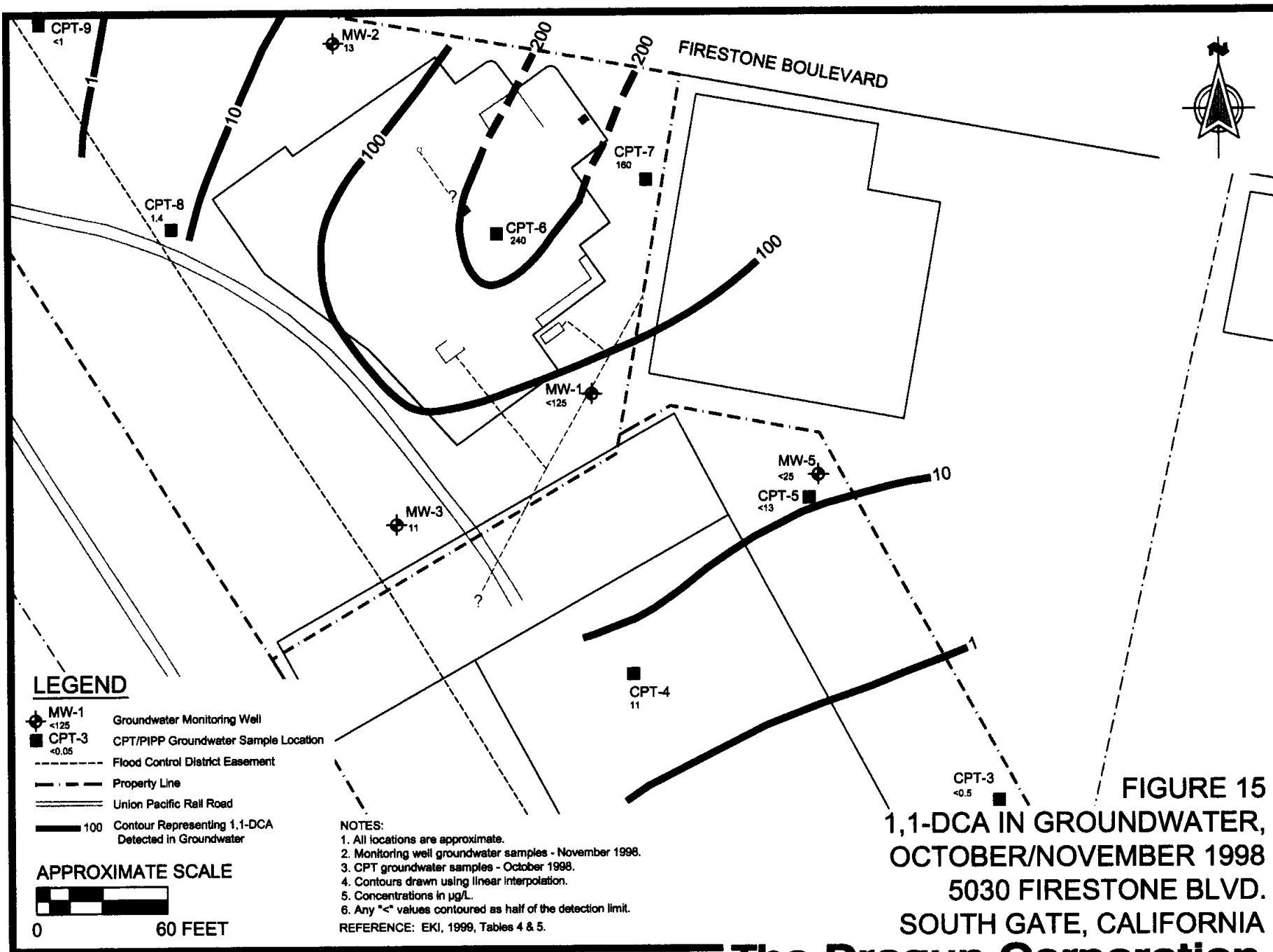




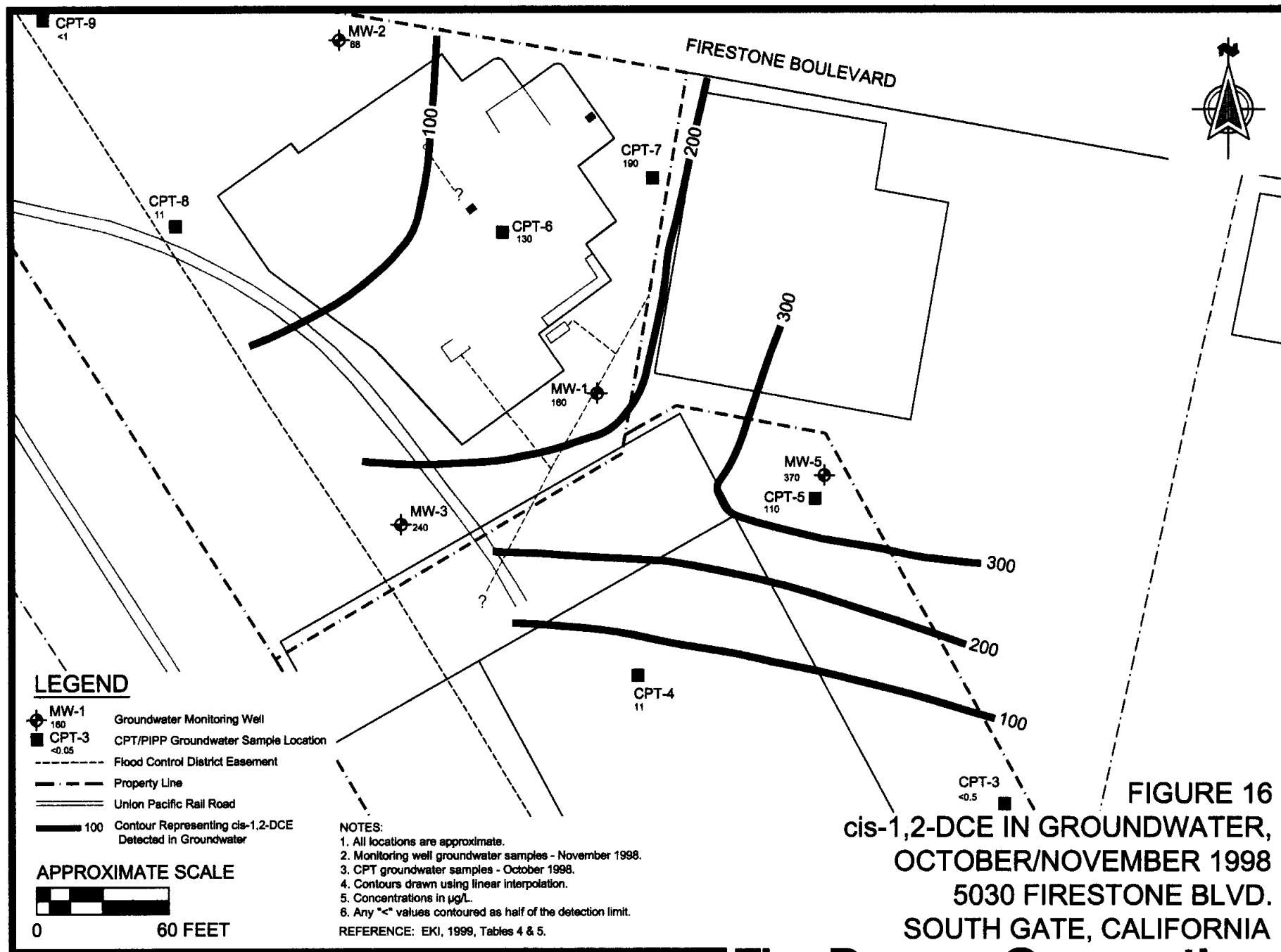
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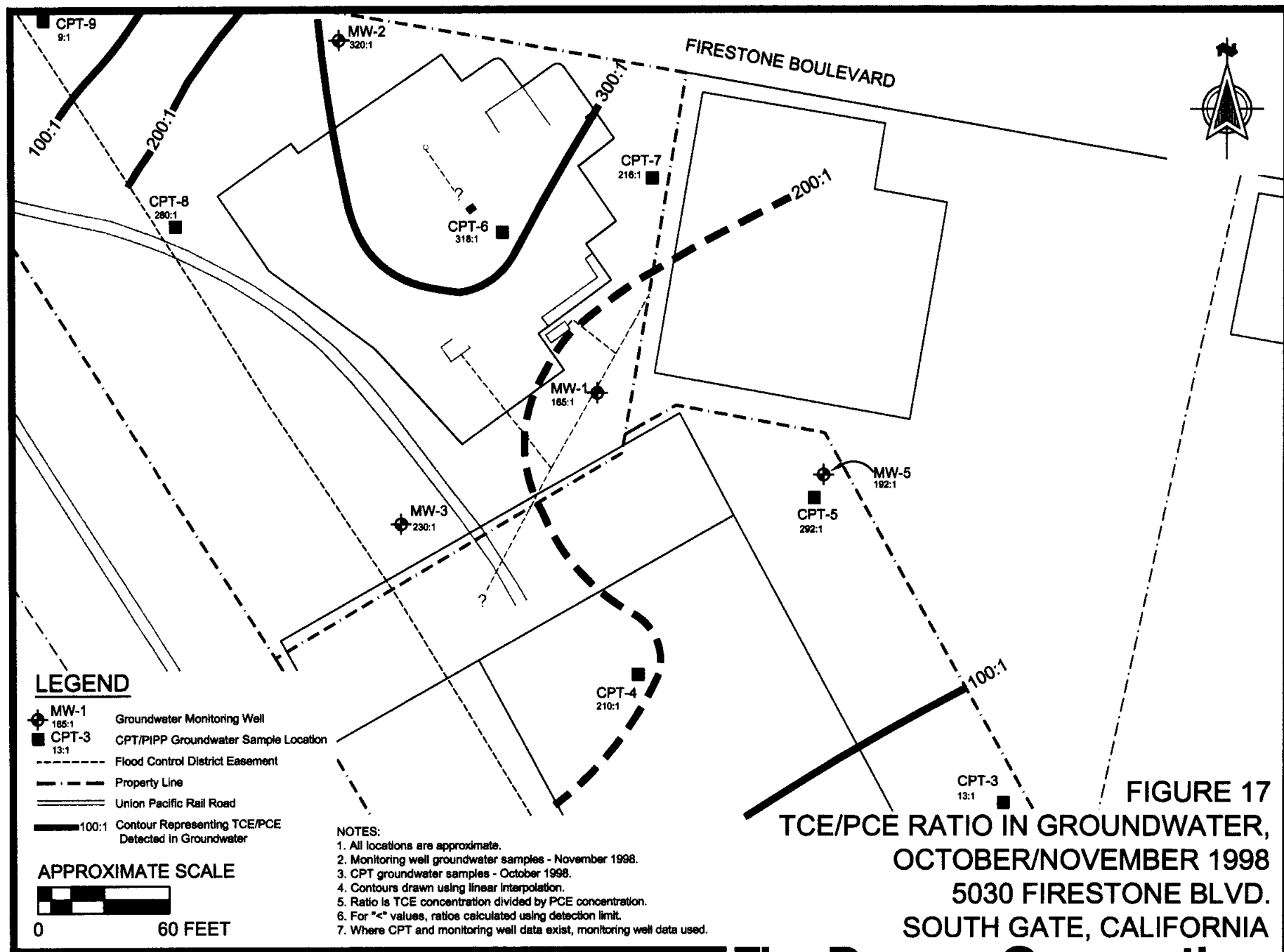


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## TABLES

## **TABLES**

Table 1. Summary of Water Table Elevation Data  
5030 Firestone Boulevard  
South Gate, California  
Project #21025-02

DATE	MW-1 (FMSL)	MW-2 (FMSL)	MW-3 (FMSL)	MW-4 (FMSL)	MW-5 (FMSL)
02/27/98	61.30	62.63	61.32	na	na
03/02/98	61.27	62.59	61.31	na	na
03/04/98	61.51	62.52	61.47	na	na
04/08/98	61.52	na	61.48	na	na
05/20/98	62.10	63.14	62.07	na	na
10/08/98	62.71	63.81	62.61	na	na
11/03/98	na	na	na	61.95*	62.81*
11/05/98	62.95	64.01	62.27	62.08	62.83
12/21/98	62.72	63.96	62.54	61.79	62.55
01/19/99	62.83	63.99	62.69	61.92	62.67
02/03/99	63.11	64.10	62.90	62.09	62.93
03/30/99	62.87	64.02	62.68	61.83	62.64
06/01/99	62.61	63.74	62.29	61.44	62.25
07/29/99	62.27	63.52	62.02	61.09	61.94
09/01/99	62.33	63.51	61.97	61.02	61.91
09/23/99	62.06	63.30	61.77	60.76	61.65
10/18/99	61.66	63.05	61.50	60.50	61.41
12/08/99	61.54	63.03	61.23	60.24	61.15
01/27/00	61.69	62.79	61.18	60.02	60.96
02/28/00	61.75	62.79	61.12	na	60.98
03/15/00	62.03	63.03	61.46	60.35	61.26
04/13/00	61.36	62.73	61.01	na	60.91
05/18/00	61.51	63.15	60.93	59.91	60.84
06/20/00	61.49	63.17	60.99	59.78	60.83
07/13/00	60.92	63.36	60.62	59.62	60.50
08/17/00	60.79	63.27	60.81	59.36	60.28
09/07/00	60.94	62.35	61.04	59.41	60.44
10/26/00	60.22	61.91	59.93	58.83	59.78
11/21/00	60.49	62.13	59.87	58.86	59.80
12/05/00	60.37	62.14	60.10	59.01	59.97

- NOTES:
- 1) FMSL = feet above mean sea level
  - 2) \* = well developed.
  - 3) Monitoring well northing and easting coordinates and top-of-casing elevations for wells MW-1, MW-2, and MW-3 were surveyed on 3/6/98 by Rattray & Associates.
  - 4) Monitoring well northing and easting coordinates and top-of-casing elevations for wells MW-4 and MW-5 were surveyed on 12/21/98 by Rattray & Associates.
  - 5) Data summarized from Erler & Kalinowski reports (EKI, 1998b, 1999a, 2000e).

k:\21025-01\tables\May 16, 2001 revisednew tables from their data\table 1-elevations FASL

5/16/01

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Table 2. Summary of TCE and PCE Concentrations in Soil Gas  
5030 Firestone Boulevard  
South Gate, California  
Project #21025-01

Parameter	SG-1-5	SG-2-5	SG-3-5	SG-4-5	SG-5-5	SG-5-5 DUPLICATE	SG-6-5	SG-7-5	SG-8A-5	SG-8B-5	SG-8C-5	SG-9-5	SG-10-5	SG-11-5	SG-12-5	SG-13-5	SG-14-5	SG-15-5	SG-16-5	SG-17-5	SG-18-5
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
PCE - tetrachloroethane	23	4.7	1.6	5.2	1.6	1.7	0.061	0.075	1.1	4.1	5.8	25	28	0.94	< 0.01	5	28	5.9	1	4.2	0.13
TCE - trichloroethene	9.6	3.9	3.9	8.9	1.5	1.6	< 0.01	< 0.01	2.3	4.4	4.5	11	13	0.47	< 0.01	7.9	8	4.7	0.96	2.2	0.074
1,1,1-TCA - 1,1,1-trichloroethane	0.5	0.5	0.15	0.13	0.044	0.043	0.013	< 0.01	0.46	0.65	0.59	0.71	0.26	0.036	< 0.01	0.18	0.5	0.2	0.046	0.2	0.017
TCE/PCE	0.4	0.8	2.4	1.7	0.9	0.9	0.2	0.1	2.1	1.1	0.8	0.4	0.5	0.5	1.0	1.6	0.3	0.8	1.0	0.5	0.6

Parameter	SG-19-5	SG-20-5	SG-21-5	SG-22-5	SG-23-5	SG-24-5	SG-24-5 DUPLICATE	SG-25-5	SG-25-5 DUPLICATE	SG-26-5	SG-27-5	SG-28-5	SG-29-2	SG-30-3	SG-31-3	SG-32-5	SG-33-5	SG-34-5	SG-35-5	SG-36-5	SG-37-5
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
PCE - tetrachloroethane	0.12	0.74	3.7	25	1.3	0.57	0.68	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.036	0.028	0.021	< 0.01	3.2	6.3	1.9	3	2
TCE - trichloroethene	< 0.01	0.14	2.5	11	1.2	0.33	0.34	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.02	0.013	< 0.01	< 0.01	0.41	2.4	3.6	25	12
1,1,1-TCA - 1,1,1-trichloroethane	< 0.01	0.082	0.34	0.89	0.13	0.08	0.08	0.12	0.13	0.12	0.048	< 0.01	0.02	< 0.01	< 0.01	< 0.01	0.18	0.26	0.12	0.24	0.18
TCE/PCE	0.1	0.2	0.7	0.4	0.9	0.6	0.5	1.0	1.0	1.0	1.0	1.0	0.6	0.5	0.5	1.0	0.1	0.4	1.9	8.3	6.0

- NOTES:
- 1) Analyses performed by Interphase, Inc. in an on-site mobile laboratory.
  - 2) Samples collected on December 1 and 2, 1997.
  - 3) Sample depth indicated in sample name. Depth indicated by last number separated by a hyphen in each sample description (i.e., sample SG-5-5 collected at five feet below ground surface [BGS]). Soil gas collected at five feet BGS except at locations SG-29, SG-30, and SG-31.
  - 4) Additional compounds were detected as follows:  
Chloroform: SG-1-5 = 0.055 µg/l; SG-9-5 = 0.056 µg/l; SG-10-5 = 0.053 µg/l; SG-14-5 = 0.038 µg/l; SG-22-5 = 0.040 µg/l; SG-36-5 = 0.058 µg/l.  
Trichlorofluoromethane: SG-22-5 = 0.010 µg/l; SG-33-5 = 0.032 µg/l.  
Dichlorodifluoromethane: SG-33-5 = 1.2 µg/l.
  - 5) Analyses performed in accordance with Los Angeles Regional Water Quality Control Board guidelines for active soil gas sampling.
  - 6) Data summarized from Erler & Kalinowski reports (Appendix C; EKI, 1998a).

Table 3. Summary of TCE and PCE Concentrations in Soil  
5030 Firestone Boulevard  
South Gate, California  
Project #21025-02

Sample Number Depth (feet)	B1-5.5 5.5 mg/kg	B1-11 11 mg/kg	B1-20 20 mg/kg	B2-5.5 5.5 mg/kg	B2-10.5 10.5 mg/kg	B3-6 6 mg/kg	B3-11 11 mg/kg	B4-6 6 mg/kg	B4-16 16 mg/kg	B4-20.5 20.5 mg/kg	B5-6 6 mg/kg	B5-10.5 10.5 mg/kg	B6-6 6 mg/kg	B6-10.5 10.5 mg/kg	B7-6 6 mg/kg	B7-11 11 mg/kg	B8-6 6 mg/kg	B8-11 11 mg/kg	B9-5.5 5.5 mg/kg	B9-10.5 10.5 mg/kg	B10-6 6 mg/kg	B10-11 11 mg/kg	B11-6 6 mg/kg
PCE - tetrachloroethane	0.074	0.13	0.035	0.018	0.045	0.042	0.12	0.076	2.2	140	0.025	0.065	0.13	0.019	0.055	< 0.015	0.0029	0.041	0.0036	0.022	0.027	< 0.015	0.061
TCE - trichloroethene	0.024	0.037	0.04	0.0073	< 0.015	0.01	0.034	0.021	0.092	270	0.0053	0.19	0.031	0.025	0.019	< 0.015	< 0.0025	0.05	< 0.0025	0.041	0.0064	0.036	0.016
TCE/PCE	0.32	0.28	1.14	0.41	0.33	0.24	0.28	0.28	0.04	1.93	0.21	2.92	0.24	1.32	0.35	1	0.86	1.22	0.69	1.86	0.24	2.4	0.26

Sample Number Depth (feet)	B11-11 11 mg/kg	B12-6 6 mg/kg	B13-6 6 mg/kg	B15-10 10 mg/kg	B15-16 16 mg/kg	B15-20.5 20.5 mg/kg	B15-26.5 26.5 mg/kg	B15-31 31 mg/kg	B15-35.5 35.5 mg/kg	B15-40 40 mg/kg	B16-6 6 mg/kg	B16-11 11 mg/kg	B16-16 16 mg/kg	B16-21 21 mg/kg	B16-26 26 mg/kg	B16-31 31 mg/kg	B16-35.5 35.5 mg/kg	B16-41 41 mg/kg	B16-46 46 mg/kg	B16-51 51 mg/kg	B17-6 6 mg/kg	B17-11 11 mg/kg	B17-16 16 mg/kg
PCE - tetrachloroethane	< 0.014	< 0.0025	< 0.0025	< 0.005	< 0.005	< 0.005	0.054	0.041	0.026	< 0.005	< 0.005	< 0.005	0.027	0.041	0.047	0.027	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
TCE - trichloroethene	0.035	< 0.0025	< 0.0025	< 0.005	< 0.005	< 0.005	0.38	0.52	0.14	1.2	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.41	0.39	1.3	< 0.005	< 0.005	< 0.005
TCE/PCE	2.5	1	1	1	1	1	7.04	12.68	5.38	240	1	1	0.19	0.12	0.11	0.19	1	82	78	260	1	1	1

Sample Number Depth (feet)	B17-21 21 mg/kg	B17-26 26 mg/kg	B17-31.5 31.5 mg/kg	B17-36 36 mg/kg	B17-41 41 mg/kg	B17-46 46 mg/kg	B17-53.5 53.5 mg/kg	B18-11 11 mg/kg	B18-16 16 mg/kg	B18-21 21 mg/kg	B18-27 27 mg/kg	B18-31 31 mg/kg	B18-36 36 mg/kg	B18-41 41 mg/kg	B18-46 46 mg/kg	B19-16 16 mg/kg	B19-21 21 mg/kg	B19-26 26 mg/kg	B19-31 31 mg/kg	B19-36.5 36.5 mg/kg	B19-41 41 mg/kg	B19-46 46 mg/kg
PCE - tetrachloroethane	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.4	0.37	0.66	0.093	0.14	< 0.005	0.091	0.18	0.42	0.28	0.28	0.25	< 0.005	0.16	0.18
TCE - trichloroethene	< 0.005	0.048	0.056	1.4	1.2	1.6	1.4	0.11	0.61	16	0.75	2	0.056	2.3	8.7	0.2	1.8	1.5	1.2	0.11	4	4.3
TCE/PCE	1	9.6	11.2	280	240	320	280	0.28	1.65	24.24	8.06	14.29	11.2	25.27	48.33	0.48	6.43	5.36	4.8	22	25	23.89

Sample Number Depth (feet)	MW1-10.5 10.5 mg/kg	MW1-20.5 20.5 mg/kg	MW1-30.5 30.5 mg/kg	MW2-10.5 10.5 mg/kg	MW2-20.5 20.5 mg/kg	MW2-30.5 30.5 mg/kg	MW3-11 11 mg/kg	MW3-20.5 20.5 mg/kg	MW3-30.5 30.5 mg/kg	MW5-21 21 mg/kg	MW5-31 31 mg/kg	MW5-41 41 mg/kg
PCE - tetrachloroethane	0.021	0.023	0.011	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0025	<0.0025	<0.050
TCE - trichloroethene	0.018	0.062	0.06	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.022	0.011	0.55
TCE/PCE	0.86	2.7	5.45	1	1	1	1	1	1	8.8	4.4	11

NOTES: 1) Analyses performed by Orange Coast Analytical using EPA methods 8240 and 8010.  
2) Samples from borings B1 through B13 collected on October 28, 1997. Samples from borings B15 through B19 collected December 1 and 2, 1997 (EKI, 1998a).  
3) Samples from MW-1 through MW-3 collected in June 1998 (EKI, 1998b).  
4) Samples from MW-5 collected in January 1999 (EKI, 1999a).  
5) Data summarized from Erler & Kalinowski reports (EKI, 1998a, 1998b, 1999a).

Table 4. Summary of VOC Concentrations in Groundwater - Monitoring Wells  
5030 Firestone Boulevard  
South Gate, California  
Project #21025-02

Project #21025-02															MW-2									
Well ID Sample #  Date	MW-1													MW-2-0304	MW-2-0520	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2-A*	MW-2		
	MW-1-0304	MW-1-0304 DUP	MW-1-0520	MW-1	MW-1	MW-1	MW-1	MW-1	MW-1-A*	MW-1	MW-1	MW-1	MW-1	MW-1	MW-2-0304	MW-2-0520	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2-A*	MW-2	
	03/04/98 µg/L	03/04/98 µg/L	05/20/98 µg/L	11/05/98 µg/L	02/03/99 µg/L	06/01/99 µg/L	09/01/99 µg/L	12/08/99 µg/L	12/08/99 µg/L	03/15/00 µg/L	06/20/00 µg/L	09/07/00 µg/L	12/05/00 µg/L	03/04/98 µg/L	05/20/98 µg/L	11/05/98 µg/L	02/03/99 µg/L	06/01/99 µg/L	09/01/99 µg/L	12/08/99 µg/L	12/08/99 µg/L	03/15/00 µg/L		
Benzene	< 100	< 100	< 125	< 125	< 125	< 100	< 100	< 250	< 100	< 100	< 100	< 100	< 100	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 13	< 10	< 10	
Toluene	< 100	< 100	< 125	< 125	< 125	< 100	< 100	< 250	< 100	< 100	< 100	< 100	< 100	13	14	13	13	12	16	< 13	12	< 10	< 10	
1,1-Dichloroethane (1,1-DCA)	< 100	< 100	< 125	< 125	< 125	< 100	140	< 250	110	< 100	< 100	< 100	< 100	34	38	36	36	34	49	< 13	22	< 10	< 10	
1,1-Dichloroethene (1,1-DCE)	220	210	160	140	130	140	220	< 250	< 100	< 100	< 100	< 100	< 100	< 10	< 10	< 10	< 10	< 10	< 10	< 13	< 10	< 10	< 10	
1,2-Dichloroethane (1,2-DCA)	< 100	< 100	< 125	< 125	< 125	< 100	< 100	< 250	< 100	< 100	< 100	< 100	< 100	65	68	68	70	68	72	57	63	74	74	
cis-1,2-Dichloroethene (c-1,2-DCE)	130	150	130	160	160	190	200	< 250	< 100	< 100	< 100	< 100	< 100	< 10	< 10	< 10	< 10	< 10	< 10	< 13	< 10	< 10	< 10	
trans-1,2-Dichloroethene (t-1,2-DCE)	< 100	< 100	< 125	< 125	< 125	< 100	< 100	< 250	< 100	< 100	< 100	< 100	< 100	< 10	< 10	< 10	< 10	< 10	< 10	< 13	< 10	< 10	< 10	
Tetrachloroethene (PCE)	140	160	< 125	170	160	160	190	< 250	160	150	< 100	< 100	< 100	< 10	< 10	< 10	< 10	< 10	< 10	< 13	< 10	< 10	< 10	
Trichloroethene (TCE)	24,000	25,000	24,000	28,000	27,000	28,000	32,000	30,000	33,000	30,000	24,000	21,000	3,000	2,700	3,000	3,200	3,200	2,800	3,100	2,400	2,600	2,800	2,800	
TCE/PCE	171	156	192	165	169	175	168	120	206	200	240	210	300	270	300	320	320	280	310	185	260	280	280	

Well ID Sample #  Date	MW-2			MW-3															MW-4				
	MW-2	MW-2	MW-2	MW-3-0304	W-3-052	MW-3	MW-3	MW-3	MW-3	MW-3	MW-3	MW-3-A*	MW-3	MW-3	MW-3 DUP	MW-3	MW-3 DUP	MW-3	MW-3 DUP	MW-4	MW-4	MW-4	MW-4
	06/20/00 µg/L	09/07/00 µg/L	12/05/00 µg/L	03/04/98 µg/L	05/20/98 µg/L	11/05/98 µg/L	02/03/99 µg/L	06/01/99 µg/L	09/01/99 µg/L	12/08/99 µg/L	12/08/99 µg/L	03/15/00 µg/L	06/20/00 µg/L	06/20/00 µg/L	09/07/00 µg/L	09/07/00 µg/L	12/05/00 µg/L	12/05/00 µg/L	11/05/98 µg/L	02/03/99 µg/L	06/01/99 µg/L	09/01/99 µg/L	
Benzene	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 13	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	< 10	< 10	< 10	13	< 10	< 10	< 10	< 10	< 10	< 13	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	20	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethane (1,1-DCA)	< 10	< 10	< 10	14	13	11	11	11	13	< 13	13	11	10	11	< 10	< 10	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethene (1,1-DCE)	< 10	< 10	< 10	82	58	66	64	66	80	< 13	55	61	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.5	2.1	65	< 0.5
1,2-Dichloroethane (1,2-DCA)	< 10	< 10	< 10	< 10	< 10	< 10	< 10	53	< 10	< 13	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5
cis-1,2-Dichloroethene (c-1,2-DCE)	46	42	42	200	230	240	220	240	270	< 13	19	20	14	16	< 10	< 10	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5
trans-1,2-Dichloroethene (t-1,2-DCE)	< 10	< 10	< 10	< 10	15	18	18	18	20	< 13	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethene (PCE)	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 13	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.5	< 0.5	0.9	< 0.5
Trichloroethene (TCE)	2,000	1,800	2,300	2,800	2,800	2,300	2,000	1,900	2,600	2,500	2,900	3,100	1,900	2,100	1,700	1,700	2,400	2,500	6.7	< 0.5	0.9	< 0.5	< 0.5
TCE/PCE	200	180	230	280	280	230	200	190	260	192	290	310	190	210	170	170	240	250	13	0	2	0	0

Well ID Sample #  Date	MW-4				MW-5																		
	MW-4	MW-4	MW-4	MW-4	MW-5	MW-5 DUP	MW-5	MW-5 DUP	MW-5	MW-5	MW-5	MW-5	MW-5 DUP	MW-5	MW-5-A*	MW-5 DUP	MW-5-A*	MW-5	MW-5 DUP	MW-5	MW-5	MW-5	MW-5
	03/15/00 µg/L	06/20/00 µg/L	09/07/00 µg/L	12/05/00 µg/L	11/05/98 µg/L	11/05/98 µg/L	02/03/99 µg/L	02/03/99 µg/L	06/01/99 µg/L	06/01/99 µg/L	09/01/99 µg/L	09/01/99 µg/L	12/08/99 µg/L	12/08/99 µg/L	12/08/99 µg/L	12/08/99 µg/L	3/1/5/00 µg/L	3/1/5/00 µg/L	06/20/00 µg/L	09/07/00 µg/L	12/05/00 µg/L		
Benzene	77	< 0.5	< 0.5	< 0.5	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 50	< 25	< 50	< 50	< 25	< 10	< 10		
Toluene	< 0.5	< 0.5	< 0.5	< 0.5	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 50	< 25	< 50	< 50	< 25	< 10	< 10		
1,1-Dichloroethane (1,1-DCA)	< 0.5	< 0.5	< 0.5	< 0.5	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 50	< 25	< 50	< 50	< 25	< 10	< 10		
1,1-Dichloroethene (1,1-DCE)	< 0.5	< 0.5	< 0.5	< 0.5	42	40	49	45	52	56	40	69	< 50	< 25	< 50	< 25	< 50	< 50	< 25	< 10	< 10		
1,2-Dichloroethane (1,2-DCA)	< 0.5	< 0.5	< 0.5	< 0.5	< 25	< 25	< 25	< 25	35	39	< 25	< 25	< 50	< 25	< 50	< 25	< 50	< 50	< 25	< 10	< 10		
cis-1,2-Dichloroethene (c-1,2-DCE)	< 0.5	< 0.5	< 0.5	< 0.5	380	360	420	370	420	430	420	440	390	410	360	410	440	450	350	280	190		
trans-1,2-Dichloroethene (t-1,2-DCE)	< 0.5	< 0.5	< 0.5	< 0.5	30	29	35	31	36	35	45	45	< 50	25	< 50	26	< 50	< 50	< 25	< 10	< 10		
Tetrachloroethene (PCE)	< 0.5	< 0.5	< 0.5	< 0.5	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 50	< 25	< 50	< 50	< 25	< 10	< 10		
Trichloroethene (TCE)	0.68	< 0.5	< 0.5	< 0.5	5,000	4,800	5,100	4,500	5,500	5,300	5,500	6,000	5,100	5,300	5,000	5,300	5,500	5,800	4,400	3,700	4,700		
TCE/PCE	1	1	1	1	200	192	204	180	220	212	220	240	102	212	100	212	110	116	176	370	470		

NOTES: 1) Analyses performed by Orange Coast Analytical, Inc., in Tustin, CA, using EPA Method 8260.  
2) < indicates that the analyte was not detected at a concentration above the indicated method detection limit.  
3) \* = samples collected on December 8, 1999, were initially analyzed on December 9, 1999, and were re-analyzed on December 17, 1999, in an attempt to achieve lower method detection limits.  
4) Bolding represents detections above the method detection limit.  
5) Data summarized from Erler & Kalinowski reports (EKI, 1998b, 1999a, 2000e).

Table 5. Summary of VOC Concentrations in Groundwater - PIPP at CPT Locations  
5030 Firestone Boulevard  
South Gate, California  
Project #21025-02

	CPT-1 10/01/98 55' BGS µg/L	CPT-1 10/01/98 95' BGS µg/L	CPT-2 10/01/98 55' BGS µg/L	CPT-3 10/01/98 55' BGS µg/L	CPT-4A 10/01/98 55' BGS µg/L	CPT-4B 10/01/98 55' BGS µg/L	CPT-5 10/01/98 55' BGS µg/L	CPT-6 10/02/98 55' BGS µg/L	CPT-7 10/02/98 55' BGS µg/L	CPT-8 10/02/98 55' BGS µg/L	CPT-9 10/02/98 55' BGS µg/L
Acetone	170	8.1	300	170	95	80	480	< 400	< 500	16	490
Methyl ethyl ketone (MEK)	4.6	< 1	3.5	2.7	2.2	8.4	< 25	< 200	< 250	< 1	7.7
Benzene	1.6	< 0.5	< 1	0.58	< 1	< 1	< 13	< 100	< 125	< 0.5	< 1
Toluene	< 0.5	< 0.5	1.1	0.55	1.1	< 1	< 13	< 100	< 125	< 0.5	< 1
Xylenes	< 0.5	< 0.5	< 1	0.66	1.2	< 1	< 13	< 100	< 125	< 0.5	< 1
1,1-Dichloroethane (1,1-DCA)	< 0.5	< 0.5	< 1	< 0.5	1.2	1.1	< 13	240	160	1.4	< 1
1,2-Dichloroethane (1,2-DCA)	< 0.5	< 0.5	< 1	< 0.5	< 1	< 1	< 13	< 100	< 125	< 0.5	< 1
1,1-Dichloroethene (1,1-DCE)	< 0.5	< 0.5	< 1	< 0.5	4.1	3.4	< 13	< 100	< 125	6.7	< 1
cis-1,2-Dichloroethene (c-1,2-DCE)	< 0.5	< 0.5	< 1	2.6	11	10	110	130	190	11	< 1
trans-1,2-Dichloroethene (t-1,2-DCE)	< 0.5	< 0.5	< 1	< 0.5	< 1	< 1	< 13	< 100	< 125	1.3	< 1
Tetrachloroethene (PCE)	< 0.5	< 0.5	< 1	< 0.5	< 1	< 1	< 13	110	< 125	< 0.5	< 1
Trichloroethene (TCE)	< 0.5	< 0.5	1.6	6.3	220	200	3800	35000	27000	140	9.1
TCE/PCE	1	1	2	13	220	200	292	318	216	280	9

NOTES: 1) Sample CPT-4B is a duplicate of CPT-4B.  
2) Chemical analyses were performed by Orange Coast Analytical, Inc. in Tustin, CA.  
3) California maximum contaminant levels (MCLs) are as reported in the Drinking Water Standards and Health Advisories Table by USEPA Region IX, dated June 1998.  
"none" indicates that no MCL (California or federal) has been established.  
4) Bolding represents detections above the method detection limit.  
5) Data summarized from Erler & Kalinowski reports (EKI, 1998b).





**APPENDIX A**  
**DATA TABLES FROM ERLER AND KALINOWSKI, INC.**

**TABLE 5**  
***Soil Analytical Results for VOCs***  
**Phase II Soil Investigation Report**  
**5030 Firestone Boulevard, South Gate, California**

Sample Number	Depth (ft. bgs)	Concentration	
		PCE (mg/kg)	TCE (mg/kg)
B1-5.5	5.5	0.074	0.024
B1-11	11	0.13	0.037
B1-20	20	0.035	0.04
B2-5.5	5.5	0.018	0.0073
B2-10.5	10.5	0.045	<0.015
B3-6	6	0.042	0.01
B3-11	11	0.12	0.034
B4-6	6	0.076	0.021
B4-16	16	2.2	0.092
B4-20.5	20.5	140	270
B5-6	6	0.025	0.0053
B5-10.5	10.5	0.065	0.19
B6-6	6	0.13	0.031
B6-10.5	10.5	0.019	0.025
B7-6	6	0.055	0.019
B7-11	11	<0.015	<0.015
B8-6	6	0.0029	<0.0025
B8-11	11	0.041	0.05
B9-5.5	5.5	0.0036	<0.0025
B9-10.5	10.5	0.022	0.041
B10-6	6	0.027	0.0064
B10-11	11	<0.015	0.036
B11-6	6	0.061	0.016
B11-11	11	<0.015	0.035
B12-6	6	<0.0025	<0.0025
B13-6	6	<0.0025	<0.0025
B15-10	10	<0.005	<0.005
B15-16	16	<0.005	<0.005
B15-20.5	20.5	<0.005	<0.005
B15-26.5	26.5	0.054	0.38
B15-31	31	0.041	0.52
B15-35.5	35.5	0.026	0.14
B15-40	40	0.005	1.2
B15-44.5	44.5	0.005	1.3
B16-6	6	<0.005	<0.005
B16-11	11	<0.005	<0.005
B16-16	16	0.027	<0.005
B16-21	21	0.041	<0.005
B16-26	26	0.047	0.005
B16-31	31	0.027	<0.005
B16-35.5	35.5	0.005	0.005
B16-41	41	<0.005	0.41
B16-46	46	<0.005	0.39

**TABLE 5**  
**Soil Analytical Results for VOCs**  
**Phase II Soil Investigation Report**  
**5030 Firestone Boulevard, South Gate, California**

Sample Number	Depth (ft. bgs)	Concentration	
		PCE (mg/kg)	TCE (mg/kg)
B16-51	51	<0.005	1.3
B17-6	6	<0.005	<0.005
B17-11	11	<0.005	<0.005
B17-16	16	<0.005	<0.005
B17-21	21	<0.005	<0.005
B17-26	26	<0.005	0.048
B17-31.5	31.5	<0.005	0.056
B17-36	36	<0.005	1.4
B17-41	41	<0.005	1.2
B17-46	46	<0.005	1.6
B17-53.5	53.5	<0.005	1.4
B18-11	11	0.4	0.11
B18-16	16	0.37	0.61
B18-21	21	0.66	16
B18-27	27	0.093	0.75
B18-31	31	0.14	2
B18-36	36	<0.005	0.056
B18-41	41	0.091	2.3
B18-46	46	0.18	8.7
B19-16	16	0.42	0.2
B19-21	21	0.28	1.8
B19-26	26	0.28	1.5
B19-31	31	0.25	1.2
B19-36.5	36.5	<0.005	0.11
B19-41	41	0.16	4
B19-46	46	0.18	4.3

**Notes:**

- Abbreviations: VOCs = volatile organic compounds PCE = tetrachloroethene  
TCE = trichloroethene mg/kg = milligrams per kilogram
- Analyses performed by Orange Coast Analytical, Inc. using EPA methods 8240 and 8010
- Samples from borings B1 through B13 collected on 28 October 1997. Samples from borings B15 through B19 collected on 1 December and 2 December 1997.

**TABLE 2**  
**Soil Analytical Results for VOCs**  
Phase II Groundwater Investigation Report  
 5030 Firestone Boulevard, South Gate, California

Boring Number	Sample Number	Depth (ft. bgs)	Concentration	
			PCE (ug/kg)	TCE (ug/kg)
MW-1	MW1-10.5	10.5	21	18
MW-1	MW1-20.5	20.5	23	62
MW-1	MW1-30.5	30.5	11	60
MW-2	MW2-10.5	10.5	<5	<5
MW-2	MW2-20.5	20.5	<5	<5
MW-2	MW2-30.5	30.5	<5	<5
MW-3	MW3-11	11	<5	<5
MW-3	MW3-20.5	20.5	<5	<5
MW-3	MW3-30.5	30.5	<5	<5

**Notes:**

1. Abbreviations: PCE = tetrachloroethene  
 TCE = trichloroethene  
 ft bgs = feet beneath ground surface  
 ug/kg = micrograms per kilogram
2. Chemical analyses were performed by Orange Coast Analytical, Inc. using EPA Method 8010.
3. Samples from borings MW-1, MW-2, and MW-3 collected on 24 and 25 February 1998.
4. Sample depth is indicated in the sample name. Depth is indicated by the last number separated by a hyphen in each sample description. (i.e. sample MW1-10.5 collected at 10.5 ft bgs.

## TABLE 2

### ***Analytical Results for Samples of Soil***

Additional Groundwater Investigation and  
Quarterly Monitoring Report for October to December 1998  
 Jervis B. Webb Company, 5030 Firestone Boulevard, South Gate, California

Boring Number	Sample Number	Depth (ft. bgs)	Concentration	
			PCE (ug/kg)	TCE (ug/kg)
MW-5	MW-5-21	21	<2.5	22
MW-5	MW-5-31	31	<2.5	11
MW-5	MW-5-41	41	<50	550

**NOTES:**    Abbreviations:            PCE = tetrachloroethene  
    TCE = trichloroethene  
    ft bgs = feet beneath ground surface  
    ug/kg = micrograms per kilogram

1. Chemical analyses were performed by Orange Coast Analytical, Inc. using EPA Method 8010.
2. Samples from boring MW-5 collected on 28 November 1998.
3. Sample depth is indicated in the sample name. Depth is indicated by the last number separate a hyphen in each sample description. (i.e. sample MW-5-21 collected at 21 ft bgs.

**TABLE 1**  
**Soil Gas Analytical Results for VOCs**  
**Phase II Soil Investigation Report**  
**5030 Firestone Boulevard, South Gate, California**

Sample Name	Concentration		
	PCE (ug/L)	TCE (ug/L)	1,1,1-TCA (ug/L)
SG-1-5	23	9.6	0.5
SG-2-5	4.7	3.9	0.5
SG-3-5	1.6	3.9	0.15
SG-4-5	5.2	8.9	0.13
SG-5-5	1.6	1.5	0.044
SG-5-5 (duplicate)	1.7	1.6	0.043
SG-6-5	0.061	<0.01	0.013
SG-7-5	0.075	<0.01	<0.01
SG-8A-5	1.1	2.3	0.46
SG-8B-5	4.1	4.4	0.65
SG-8C-5	5.8	4.5	0.59
SG-9-5	25	11	0.71
SG-10-5	28	13	0.26
SG-11-5	0.94	0.47	0.036
SG-12-5	<0.01	<0.01	<0.01
SG-13-5	5	7.9	0.18
SG-14-5	28	8	0.5
SG-15-5	5.9	4.7	0.2
SG-16-5	1	0.96	0.046
SG-17-5	4.2	2.2	0.2
SG-18-5	0.13	0.074	0.017
SG-19-5	0.12	<0.01	<0.01
SG-20-5	0.74	0.14	0.082
SG-21-5	3.7	2.5	0.34
SG-22-5	25	11	0.89
SG-23-5	1.3	1.2	0.13
SG-24-5	0.57	0.33	0.080
SG-24-5 (duplicate)	0.68	0.34	0.08
SG-25-5	<0.01	<0.01	0.12
SG-25-5 (duplicate)	<0.01	<0.01	0.13
SG-26-5	<0.01	<0.01	0.12
SG-27-5	<0.01	<0.01	0.048
SG-28-5	<0.01	<0.01	<0.01
SG-29-2	0.036	0.020	0.020
SG-30-3	0.028	0.13	<0.01
SG-31-3	0.021	<0.01	<0.01
SG-32-5	<0.01	<0.01	<0.01
SG-33-5	3.2	0.41	0.18
SG-34-5	6.3	2.4	0.26
SG-35-5	1.9	3.6	0.12
SG-36-5	3.0	25	0.24
SG-37-5	2.0	12	0.18

**TABLE 1**  
***Soil Gas Analytical Results for VOCs***  
**Phase II Soil Investigation Report**  
**5030 Firestone Boulevard, South Gate, California**

**Notes:**

1. Abbreviations:  
VOCs = volatile organic compounds  
PCE = tetrachloroethene  
1,1,1-TCA = 1,1,1-trichloroethane  
TCE = trichloroethene  
ug/L = micrograms per liter
2. Analyses performed by Interphase, Inc. in an on-site mobile laboratory.
3. Samples collected on 1 and 2 December 1997.
4. Sample depth indicated in sample name. Depth indicated by last number separated by a hyphen in each sample description (i.e. sample SG-5-5 collected at 5 feet below ground surface). Soil gas collected at 5 feet below ground surface except at locations SG-29, SG-30 and SG-31.
5. Additional compounds detected were as follows:  
Chloroform: SG-1-5 = 0.055 ug/L; SG-9-5 = 0.056 ug/L; SG-10-5 = 0.053 ug/L;  
SG-14-5 = 0.038 ug/L; SG-22-5 = 0.040 ug/L; SG-36-5 = 0.058 ug/L  
Trichlorofluoromethane (F-11): SG-22-5 = 0.010 ug/L; SG-33-5 = 0.032 ug/L  
Dichlorodifluoromethane (F-12): SG-33-5 = 1.2 ug/L
6. Analyses performed in accordance with Los Angeles Regional Water Quality Control Board guidelines for active soil gas sampling.



## TABLE 2

### Analytical Results for Groundwater Samples

Quarterly Progress Report for October through December 2000

Jervis B. Webb Company of California, 5030 Firestone Boulevard, South Gate, California

Well ID	Sample Number	Sample Date	Analyte Concentration									
			Benzene (ug/L)	Toluene (ug/L)	1,1-DCA (ug/L)	1,1-DCE (ug/L)	1,2-DCA (ug/L)	c-1,2-DCE (ug/L)	t-1,2-DCE (ug/L)	PCE (ug/L)	TCE (ug/L)	TDS (mg/L)
MW-1	MW-1-0304	3/4/98	<100	<100	<100	220	<100	130	<100	140	24,000	--
	MW-1-0304DUP	3/4/98	<100	<100	<100	210	<100	150	<100	160	25,000	--
	MW-1-0520	5/20/98	<125	<125	<125	160	<125	130	<125	<125	24,000	1,500
	MW-1	11/5/98	<125	<125	<125	140	<125	160	<125	170	28,000	--
	MW-1	2/3/99	<125	<125	<125	130	<125	160	<125	160	27,000	--
	MW-1	6/1/99	<100	<100	<100	140	<100	190	<100	160	28,000	--
	MW-1	9/1/99	<100	<100	140	220	<100	200	<100	190	32,000	--
	MW-1	12/8/99	<250	<250	<250	<250	<250	<250	<250	<250	30,000	--
	MW-1-A <sup>(3)</sup>	12/8/99	<100	<100	110	150	<100	200	<100	160	33,000	--
	MW-1	3/15/00	<100	<100	<100	160	<100	230	<100	150	30,000	--
	MW-1	6/20/00	<100	<100	<100	<100	<100	<100	<100	<100	24,000	--
	MW-1	9/7/00	<100	<100	<100	<100	<100	<100	<100	<100	21,000	--
	MW-1	12/5/00	<100	<100	<100	<100	<100	<100	<100	<100	30,000	--
MW-2	MW-2-0304	3/4/98	<10	<10	13	34	<10	65	<10	<10	2,700	--
	MW-2-0520	5/20/98	<10	<10	14	38	<10	68	<10	<10	3,000	2,500
	MW-2	11/5/98	<10	<10	13	36	<10	68	<10	<10	3,200	--
	MW-2	2/3/99	<10	<10	13	36	<10	70	<10	<10	3,200	--
	MW-2	6/1/99	<10	<10	12	34	<10	68	<10	<10	2,800	--
	MW-2	9/1/99	<10	<10	16	49	<10	72	<10	<10	3,100	--
	MW-2	12/8/99	<13	<13	<13	<13	<13	57	<13	<13	2,400	--
	MW-2-A <sup>(3)</sup>	12/8/99	<10	<10	12	22	<10	63	<10	<10	2,600	--
	MW-2	3/15/00	<10	<10	<10	<10	<10	74	<10	<10	2,800	--
	MW-2	6/20/00	<10	<10	<10	<10	<10	46	<10	<10	2,000	--
	MW-2	9/7/00	<10	<10	<10	<10	<10	42	<10	<10	1,800	--
	MW-2	12/5/00	<10	<10	<10	<10	<10	50	<10	<10	2,300	--

## TABLE 2

### Analytical Results for Groundwater Samples

Quarterly Progress Report for October through December 2000

Jervis B. Webb Company of California, 5030 Firestone Boulevard, South Gate, California

Well ID	Sample Number	Sample Date	Analyte Concentration									
			Benzene (ug/L)	Toluene (ug/L)	1,1-DCA (ug/L)	1,1-DCE (ug/L)	1,2-DCA (ug/L)	c-1,2-DCE (ug/L)	t-1,2-DCE (ug/L)	PCE (ug/L)	TCE (ug/L)	TDS (mg/L)
MW-3	MW-3-0304	3/4/98	<10	13	14	82	<10	200	<10	<10	2,800	--
	MW-3-0520	5/20/98	<10	<10	13	58	<10	230	15	<10	2,800	1,100
	MW-3	11/5/98	<10	<10	11	66	<10	240	18	<10	2,300	--
	MW-3	2/3/99	<10	<10	11	64	<10	220	18	<10	2,000	--
	MW-3	6/1/99	<10	<10	11	66	53	240	18	<10	1,900	--
	MW-3	9/1/99	<10	<10	13	80	<10	270	20	<10	2,600	--
	MW-3	12/8/99	<13	<13	<13	<13	<13	220	<13	<13	2,500	--
	MW-3-A <sup>(3)</sup>	12/8/99	<10	<10	13	55	<10	240	19	<10	2,900	--
	MW-3	3/15/00	<10	<10	11	61	<10	300	20	<10	3,100	--
	MW-3	6/20/00	<10	<10	10	<10	<10	170	14	<10	1,900	--
	MW-3-DUP	6/20/00	<10	<10	11	<10	<10	200	16	<10	2,100	--
	MW-3	9/7/00	<10	<10	<10	<10	<10	160	<10	<10	1,700	--
	MW-3-DUP	9/7/00	<10	<10	<10	<10	<10	160	<10	<10	1,700	--
	MW-3	12/5/00	<10	<10	<10	<10	<10	200	<10	<10	2,400	--
	MW-3-DUP	12/5/00	<10	<10	20	<10	<10	210	<10	<10	2,500	--
MW-4	MW-4	11/5/98	<0.5	<0.5	<0.5	<0.5	<0.5	0.67	<0.5	<0.5	6.7	--
	MW-4	2/3/99	<0.5	<0.5	<0.5	<0.5	2.1	<0.5	<0.5	<0.5	<0.5	--
	MW-4	6/1/99	<0.5	<0.5	<0.5	<0.5	65	1.1	<0.5	<0.5	0.90	--
	MW-4	9/1/99	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
	MW-4	12/8/99	1.2	<0.5	<0.5	<0.5	<0.5	4.1	1.0	<0.5	17	--
	MW-4-A <sup>(3)</sup>	12/8/99	1.2	<0.5	<0.5	<0.5	<0.5	4.6	1.1	<0.5	18	--
	MW-4	3/15/00	77	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.68	--
	MW-4	6/20/00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
	MW-4	9/7/00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
	MW-4	12/5/00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--

## TABLE 2

### Analytical Results for Groundwater Samples

Quarterly Progress Report for October through December 2000

Jervis B. Webb Company of California, 5030 Firestone Boulevard, South Gate, California

Well ID	Sample Number	Sample Date	Analyte Concentration									
			Benzene (ug/L)	Toluene (ug/L)	1,1-DCA (ug/L)	1,1-DCE (ug/L)	1,2-DCA (ug/L)	c-1,2-DCE (ug/L)	t-1,2-DCE (ug/L)	PCE (ug/L)	TCE (ug/L)	TDS (mg/L)
MW-5	MW-5	11/5/98	<25	<25	<25	42	<25	380	30	<25	5,000	--
	MW-5-DUP	11/5/98	<25	<25	<25	40	<25	360	29	<25	4,800	--
	MW-5	2/3/99	<25	<25	<25	49	<25	420	35	<25	5,100	--
	MW-5-DUP	2/3/99	<25	<25	<25	45	<25	370	31	<25	4,500	--
	MW-5	6/1/99	<25	<25	<25	52	35	420	36	<25	5,500	--
	MW-5-DUP	6/1/99	<25	<25	<25	56	39	430	35	<25	5,300	--
	MW-5	9/1/99	<25	<25	<25	40	<25	420	45	<25	5,500	--
	MW-5-DUP	9/1/99	<25	<25	<25	69	<25	440	45	<25	6,000	--
	MW-5	12/8/99	<50	<50	<50	<50	<50	390	<50	<50	5,100	--
	MW-5-A <sup>(3)</sup>	12/8/99	<25	<25	<25	<25	<25	410	25	<25	5,300	--
	MW-5-DUP	12/8/99	<50	<50	<50	<50	<50	360	<50	<50	5,000	--
	MW-5-DUP-A <sup>(3)</sup>	12/8/99	<25	<25	<25	<25	<25	410	26	<25	5,300	--
	MW-5	3/15/00	<50	<50	<50	<50	<50	440	<50	<50	5,500	--
	MW-5-DUP	3/15/00	<50	<50	<50	<50	<50	450	<50	<50	5,800	--
	MW-5	6/20/00	<25	<25	<25	<25	<25	350	<25	<25	4,400	--
	MW-5	9/7/00	<10	<10	<10	<10	<10	280	<10	<10	3,700	--
	MW-5	12/5/00	<10	<10	<10	<10	<10	190	<10	<10	4,700	--

**NOTES:**

1,1-DCA = 1,1-dichloroethane  
 1,1-DCE = 1,1-dichloroethene  
 1,2-DCA = 1,2-dichloroethane  
 c-1,2-DCE = cis-1,2-dichloroethene  
 t-1,2-DCE = trans-1,2-dichloroethene

PCE = tetrachloroethene  
 TCE = trichloroethene  
 TDS = total dissolved solids  
 VOCs = volatile organic compounds

mg/l = milligrams per liter  
 ug/l = micrograms per liter  
 -- indicates not analyzed

- Analyses performed by Orange Coast Analytical, Inc., in Tustin, California, using EPA Method 8260 for VOCs and EPA Method 160.1 for TDS.
- < indicates that the analyte was not detected at a concentration above the indicated method detection limit.
- Samples collected on 8 December 1999 were initially analyzed on 9 December 1999 and were re-analyzed on 17 December 1999 in an attempt to achieve lower method detection limits.

# TABLE 4

## Analytical Results for Direct-Push Groundwater Samples

Additional Groundwater Investigation and Quarterly Monitoring Report for October to December 1998  
Jervis B. Webb Company, 5030 Firestone Boulevard, South Gate, California

PIPP Location	Sample Date	Depth (ft bgs)	Volatile Organic Compounds - EPA Method 8260 (ug/L)											
			Acetone	MEK	Benzene	Toluene	Xylenes	1,1-DCA	1,2-DCA	1,1-DCE	c-1,2-DCE	t-1,2-DCE	PCE	TCE
CPT-1	10/1/98	55	170	4.6	1.6	<0.5	1.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CPT-1	10/1/98	95	8.1	<1	<0.5	<0.5	<0.5	<0.5	5.3	<0.5	<0.5	<0.5	<0.5	<0.5
CPT-2	10/1/98	55	300	3.5	<1	1.1	<1	<1	<1	<1	<1	<1	<1	<1
CPT-3	10/1/98	55	170	2.7	0.58	0.55	0.66	<0.5	<0.5	<0.5	2.6	<0.5	<0.5	1.6
CPT-4A	10/1/98	55	95	2.2	<1	1.1	1.2	1.2	<1	4.1	11	<1	<1	6.3
CPT-4B	10/1/98	55	80	8.4	<1	<1	<1	1.1	<1	3.4	10	<1	<1	220
CPT-5	10/1/98	55	480	<25	<13	<13	<13	<13	<13	<13	110	<13	<13	200
CPT-6	10/2/98	55	<400	<200	<100	<100	<100	240	<100	<100	130	<100	110	3,800
CPT-7	10/2/98	55	<500	<250	<125	<125	<125	160	<125	<125	190	<125	<125	35,000
CPT-8	10/2/98	55	16	<1	<0.5	<0.5	<0.5	1.4	<0.5	6.7	11	<125	<125	27,000
CPT-9	10/2/98	55	490	7.7	<1	<1	<1	<1	<1	<1	<1	<1	<1	140
California MCL			none	none	1	150	1,750	5	0.5	6	6	10	5	5
NOTES: Abbreviations:			PIPP: Pesticide Incident Response Plan											

### NOTES: Abbreviations:

PIPP = Push-In Plastic Piezometer  
ft bgs = feet below ground surface  
ug/L = micrograms per liter  
MEK = Methyl ethyl ketone (2-butanone)  
Xylenes = Total xylenes  
1,1-DCA = 1,1-Dichloroethane  
1,2-DCA = 1,2-Dichloroethane  
1,1-DCE = 1,1-Dichloroethene  
c-1,2-DCE = cis-1,2-Dichloroethene  
t-1,2-DCE = trans-1,2-Dichloroethene  
PCE = Tetrachloroethene  
TCE = Trichloroethene

1. Sample CPT-4B is a duplicate of sample CPT-4A.
2. Chemical analyses were performed by Orange Coast Analytical, Inc. in Tustin, California
3. California maximum contaminant levels ("MCLs") are as reported in the Drinking Water Standards and Health Advisories Table by U.S. EPA Region IX, dated June 1998. "none" indicates that no MCL (California or federal) has been established.

# TABLE 1

## *Groundwater Elevations in Monitoring Wells*

Quarterly Progress Report for October through December 2000

Jervis B. Webb Company of California, 5030 Firestone Boulevard, South Gate, California

Well ID	Date	Elevation of Top-of-Casing (ft msl)	Depth to Water (ft bgs)	Elevation of Water Surface (ft msl)	Comments
MW-1	2/27/98	106.09	44.79	61.30	
	3/2/98	106.09	44.82	61.27	
	3/4/98	106.09	44.58	61.51	
	4/8/98	106.09	44.57	61.52	
	5/20/98	106.09	43.99	62.10	
	10/8/98	106.09	43.38	62.71	
	11/5/98	106.09	43.14	62.95	
	12/21/98	106.09	43.37	62.72	
	1/19/99	106.09	43.26	62.83	
	2/3/99	106.09	42.98	63.11	
	3/30/99	106.09	43.22	62.87	
	6/1/99	106.09	43.48	62.61	
	7/29/99	106.09	43.82	62.27	
	9/1/99	106.09	43.76	62.33	
	9/23/99	106.09	44.03	62.06	
	10/18/99	106.09	44.43	61.66	
	12/8/99	106.09	44.55	61.54	
	1/27/00	106.09	44.40	61.69	
	2/28/00	106.09	44.34	61.75	
	3/15/00	106.09	44.06	62.03	
	4/13/00	106.09	44.73	61.36	
	5/18/00	106.09	44.58	61.51	
	6/20/00	106.09	44.60	61.49	
	7/13/00	106.09	45.17	60.92	
	8/17/00	106.09	45.30	60.79	
	9/7/00	106.09	45.15	60.94	
	10/26/00	106.09	45.87	60.22	
	11/21/00	106.09	45.60	60.49	
	12/5/00	106.09	45.72	60.37	
MW-2	2/27/98	106.65	44.02	62.63	Truck parked on well.
	3/2/98	106.65	44.06	62.59	
	3/4/98	106.65	44.13	62.52	
	4/8/98	106.65	NR	--	
	5/20/98	106.65	43.51	63.14	
	10/8/98	106.65	42.84	63.81	
	11/5/98	106.65	42.64	64.01	
	12/21/98	106.65	42.69	63.96	
	1/19/99	106.65	42.66	63.99	
	2/3/99	106.65	42.55	64.10	

# TABLE 1

## *Groundwater Elevations in Monitoring Wells*

Quarterly Progress Report for October through December 2000

Jervis B. Webb Company of California, 5030 Firestone Boulevard, South Gate, California

Well ID	Date	Elevation of Top-of-Casing (ft msl)	Depth to Water (ft bgs)	Elevation of Water Surface (ft msl)	Comments
MW-2 (cont.)	3/30/99	106.65	42.63	64.02	
	6/1/99	106.65	42.91	63.74	
	7/29/99	106.65	43.13	63.52	
	9/1/99	106.65	43.14	63.51	
	9/23/99	106.65	43.35	63.30	
	10/18/99	106.65	43.60	63.05	
	12/8/99	106.65	43.62	63.03	
	1/27/00	106.65	43.86	62.79	
	2/28/00	106.65	43.86	62.79	
	3/15/00	106.65	43.62	63.03	
	4/13/00	106.65	43.92	62.73	
	5/18/00	106.65	43.50	63.15	
	6/20/00	106.65	43.48	63.17	
	7/13/00	106.65	43.29	63.36	
	8/17/00	106.65	43.38	63.27	
	9/7/00	106.65	44.30	62.35	
	10/26/00	106.65	44.74	61.91	
	11/21/00	106.65	44.52	62.13	
	12/5/00	106.65	44.51	62.14	
MW-3	2/27/98	105.87	44.55	61.32	
	3/2/98	105.87	44.56	61.31	
	3/4/98	105.87	44.40	61.47	
	4/8/98	105.87	44.39	61.48	
	5/20/98	105.87	43.80	62.07	
	10/8/98	105.87	43.26	62.61	
	11/5/98	105.87	43.60	62.27	
	12/21/98	105.87	43.33	62.54	
	1/19/99	105.87	43.18	62.69	
	2/3/99	105.87	42.97	62.90	
	3/30/99	105.87	43.19	62.68	
	6/1/99	105.87	43.58	62.29	
	7/29/99	105.87	43.85	62.02	
	9/1/99	105.87	43.90	61.97	
	9/23/99	105.87	44.10	61.77	
	10/18/99	105.87	44.37	61.50	
	12/8/99	105.87	44.64	61.23	
	1/27/00	105.87	44.69	61.18	
	2/28/00	105.87	44.75	61.12	
	3/15/00	105.87	44.41	61.46	

# TABLE 1

## *Groundwater Elevations in Monitoring Wells*

Quarterly Progress Report for October through December 2000

Jervis B. Webb Company of California, 5030 Firestone Boulevard, South Gate, California

Well ID	Date	Elevation of Top-of-Casing (ft msl)	Depth to Water (ft bgs)	Elevation of Water Surface (ft msl)	Comments
MW-3 (cont.)	4/13/00	105.87	44.86	61.01	
	5/18/00	105.87	44.94	60.93	
	6/20/00	105.87	44.88	60.99	
	7/13/00	105.87	45.25	60.62	
	8/17/00	105.87	45.06	60.81	
	9/7/00	105.87	44.83	61.04	
	10/26/00	105.87	45.94	59.93	
	11/21/00	105.87	46.00	59.87	
	12/5/00	105.87	45.77	60.10	
MW-4	11/3/98	104.72	42.77	61.95	Well Developed
	11/5/98	104.72	42.64	62.08	
	12/21/98	104.72	42.93	61.79	
	1/19/99	104.72	42.80	61.92	
	2/3/99	104.72	42.63	62.09	
	3/30/99	104.72	42.89	61.83	
	6/1/99	104.72	43.28	61.44	
	7/29/99	104.72	43.63	61.09	
	9/1/99	104.72	43.70	61.02	
	9/23/99	104.72	43.96	60.76	
	10/18/99	104.72	44.22	60.50	
	12/8/99	104.72	44.48	60.24	
	1/27/00	104.72	44.70	60.02	
	2/28/00	104.72	NR	--	
	3/15/00	104.72	44.37	60.35	
	4/13/00	104.72	NR	--	Truck parked on well.
	5/18/00	104.72	44.81	59.91	
	6/20/00	104.72	44.94	59.78	
	7/13/00	104.72	45.10	59.62	
	8/17/00	104.72	45.36	59.36	
	9/7/00	104.72	45.31	59.41	
	10/26/00	104.72	45.89	58.83	
	11/21/00	104.72	45.86	58.86	
	12/5/00	104.72	45.71	59.01	
MW-5	11/3/98	106.13	43.32	62.81	Well Developed
	11/5/98	106.13	43.30	62.83	
	12/21/98	106.13	43.58	62.55	
	1/19/99	106.13	43.46	62.67	
	2/3/99	106.13	43.20	62.93	
	3/30/99	106.13	43.49	62.64	

# TABLE 1

## ***Groundwater Elevations in Monitoring Wells***

Quarterly Progress Report for October through December 2000

Jervis B. Webb Company of California, 5030 Firestone Boulevard, South Gate, California

Well ID	Date	Elevation of Top-of-Casing (ft msl)	Depth to Water (ft bgs)	Elevation of Water Surface (ft msl)	Comments
MW-5 (cont.)	6/1/99	106.13	43.88	62.25	
	7/29/99	106.13	44.19	61.94	
	9/1/99	106.13	44.22	61.91	
	9/23/99	106.13	44.48	61.65	
	10/18/99	106.13	44.72	61.41	
	12/8/99	106.13	44.98	61.15	
	1/27/00	106.13	45.17	60.96	
	2/28/00	106.13	45.15	60.98	
	3/15/00	106.13	44.87	61.26	
	4/13/00	106.13	45.22	60.91	
	5/18/00	106.13	45.29	60.84	
	6/20/00	106.13	45.30	60.83	
	7/13/00	106.13	45.63	60.50	
	8/17/00	106.13	45.85	60.28	
	9/7/00	106.13	45.69	60.44	
	10/26/00	106.13	46.35	59.78	
	11/21/00	106.13	46.33	59.80	
	12/5/00	106.13	46.16	59.97	

**NOTES:**

ft msl = feet above mean sea level

ft bgs = feet beneath ground surface

NR = Not Recorded

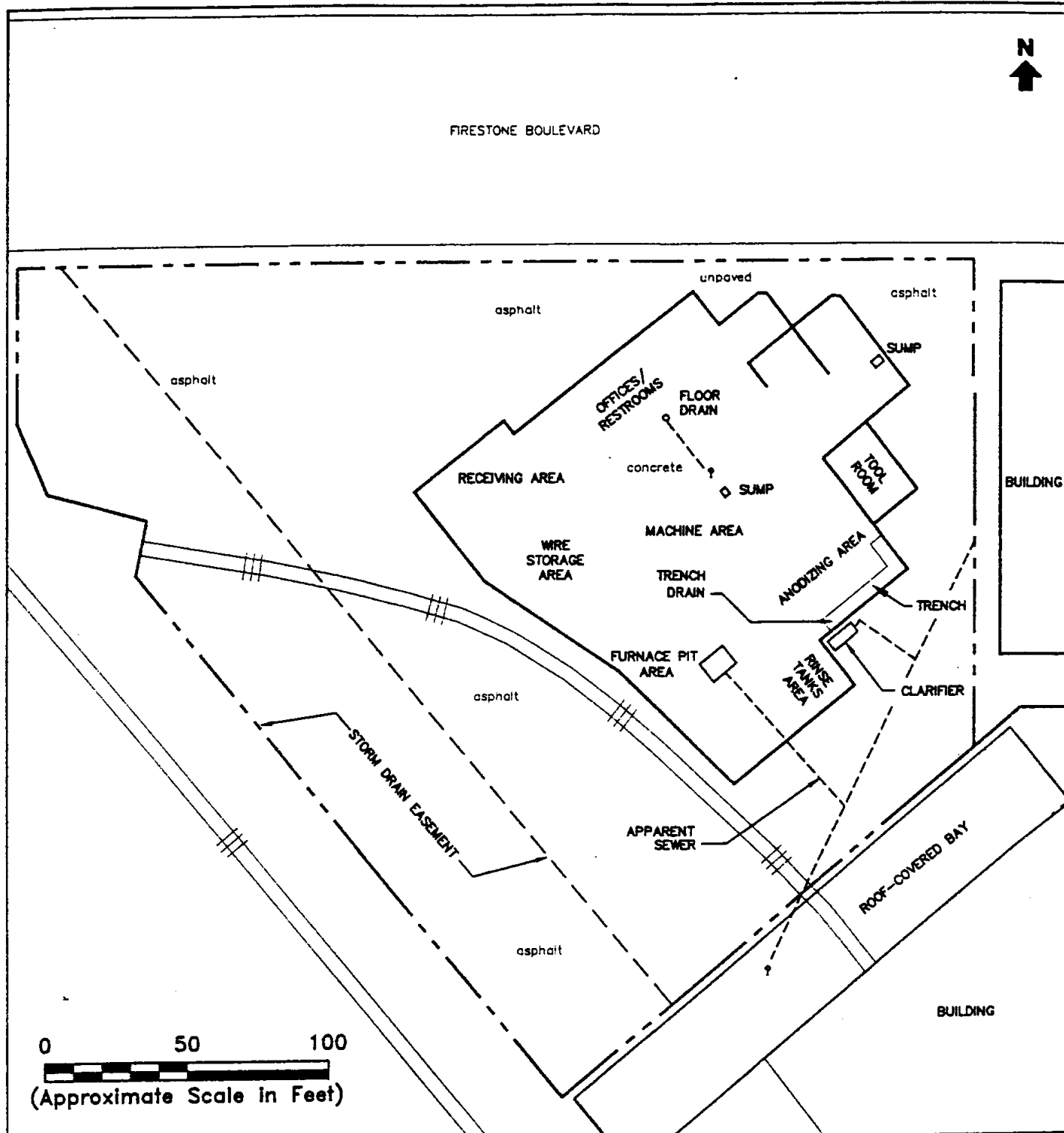
-- Not Applicable

1. Monitoring well northing and easting coordinates and top-of-casing elevations for wells MW-1, MW-2, and MW-3 were surveyed on 6 March 1998 by Rattray & Associates, Inc.
2. Monitoring well northing and easting coordinates and top-of-casing elevations for wells MW-4 and MW-5 were surveyed on 21 December 1998 by Rattray & Associates, Inc.



**APPENDIX  
B**

**APPENDIX B**  
**FIGURES FROM ERLER AND KALINOWSKI, INC.**



# **LEGEND**

- PROPERTY LINE/BOUNDARY
- BUILDING
- ||| RAILROAD SPUR
- - - SEWER (not confirmed)
- - - STORM DRAIN EASEMENT (not confirmed)

## **Notes:**

1. All locations are approximate.

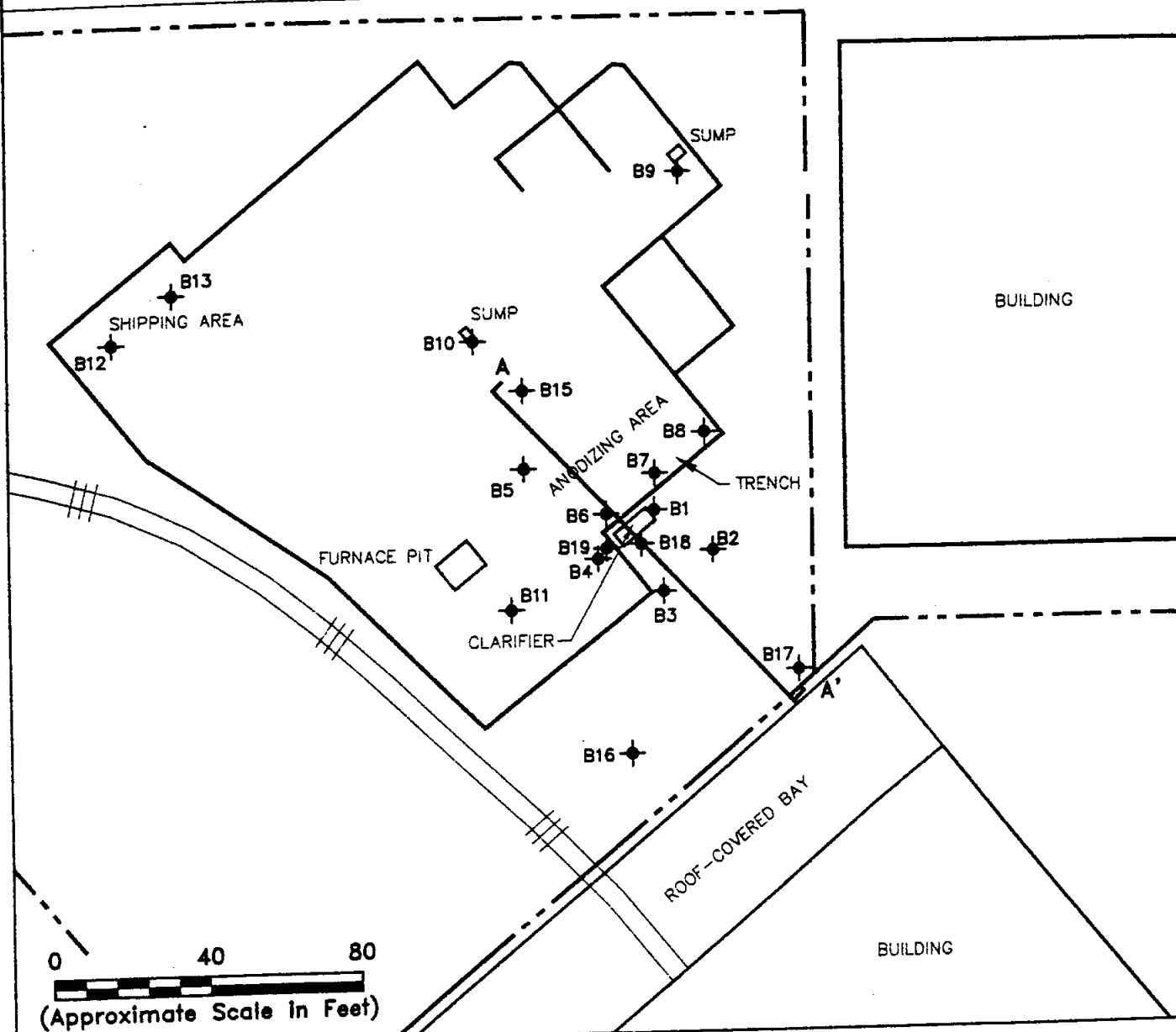
**Erler &  
Kallnowski, Inc.**

**Subject Property Features  
5030 Firestone Boulevard**





Jervis B. Webb Company  
South Gate, CA

February 1998  
EKI 961025.02

**Figure 2**



### LEGEND

-  LOCATION OF SOIL BORING
-  PROPERTY LINE/BOUNDARY
-  BUILDING
-  RAILROAD SPUR

### Notes:

1. All locations are approximate.

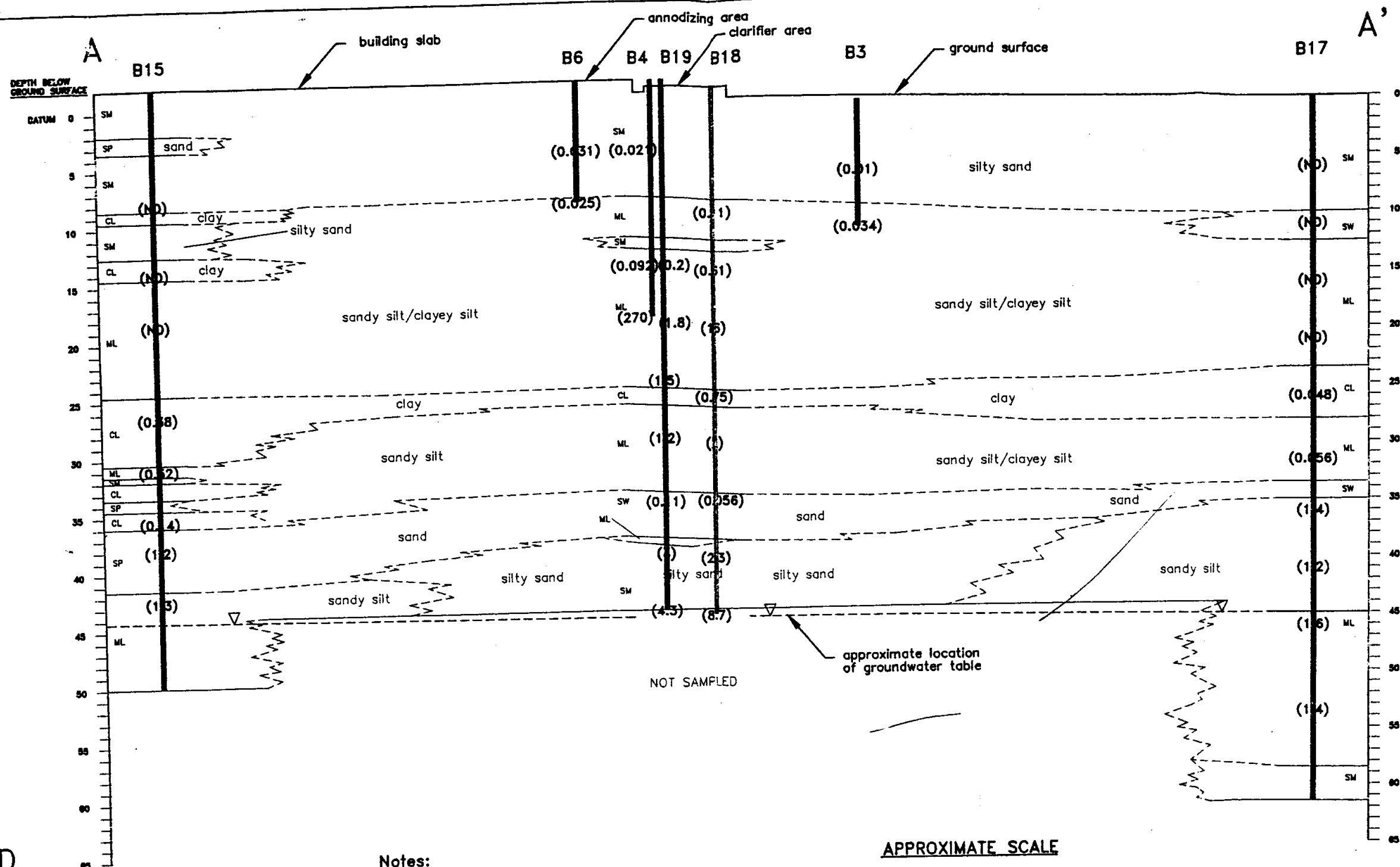
**Erler &  
Kalinowski, Inc.**

Plan Map Showing Deep  
Soil Cross Section  
Through Clarifier Area

Jervis B. Webb Co.  
South Gate, CA

February 1998  
EKI 961025.02

Figure 9



## LEGEND

(8.7)

Concentration of TCE  
Detected in Sample of Soil  
(depth of sample indicated)

————— Lithologic Contact

- - - - - Inferred Lithologic Contact

▽ ——— Approximate Location of  
Static Groundwater Table

silty sand

General Soil Type

ML

USCS Soil Classification

## Notes:

1. All locations are approximate.
2. All concentrations shown in units of milligrams per kilogram.
3. See Table 1 for analytical results for soil samples.

## APPROXIMATE SCALE

1 Inch = 10 feet

**Erler &  
Kalinowski, Inc.**

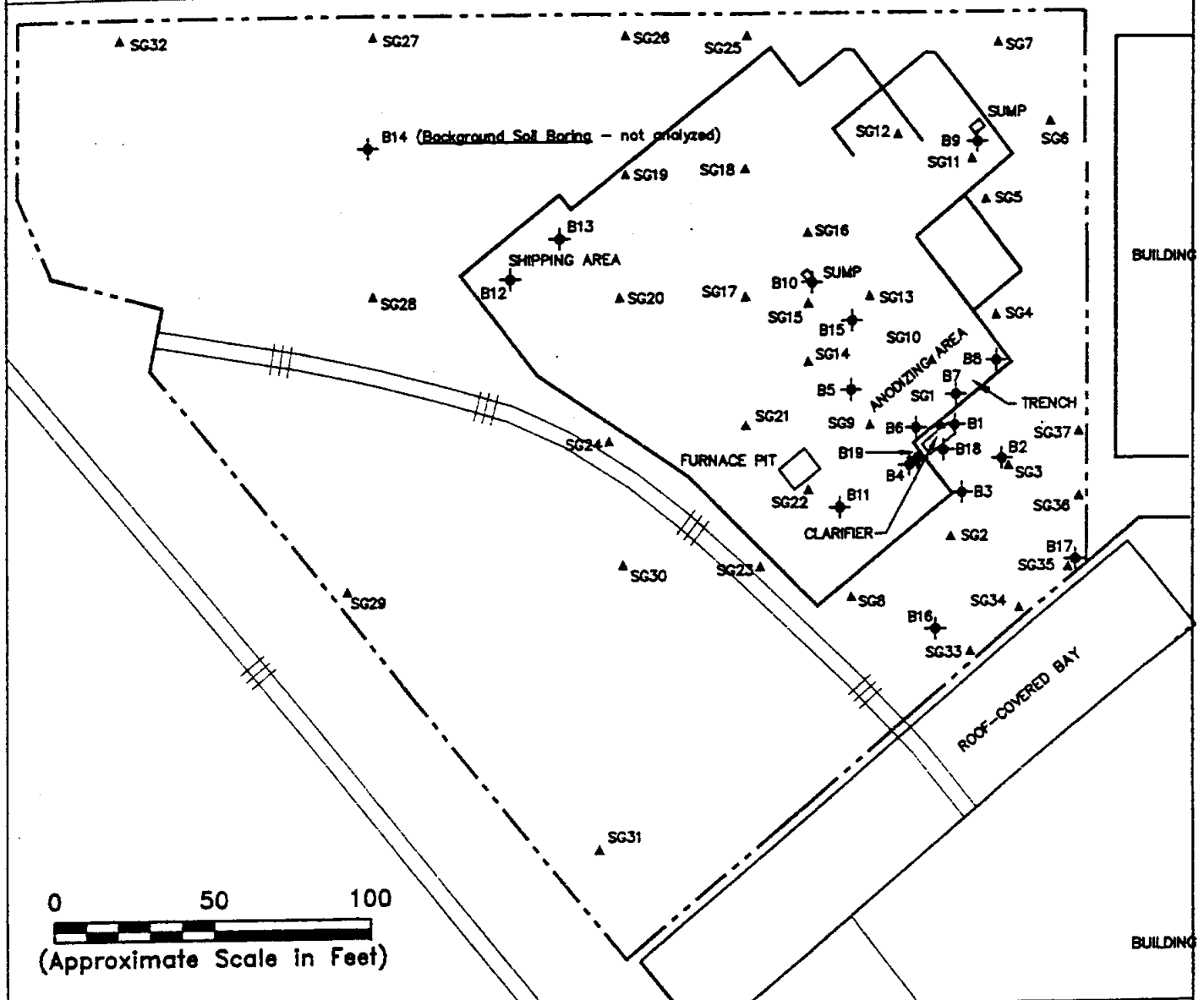
Cross Section A - A' Showing  
Concentration of TCE in  
Vadose Zone Soil

Jervis B. Webb Co.  
South Gate, CA






April 1999  
EKI 961025.03

Figure 3

FIRESTONE BOULEVARD



### LEGEND

- |   |                            |
|---|----------------------------|
|  | SOIL GAS SAMPLING LOCATION |
|  | SOIL GAS SAMPLING LOCATION |
|  | PROPERTY LINE/BOUNDARY     |
|  | BUILDING                   |
|  | RAILROAD SPUR              |

**Notes:**

1. All locations are approximate.

**Erler &  
Kalinowski, Inc.**

### Locations of Soil and Soil Gas Sampling

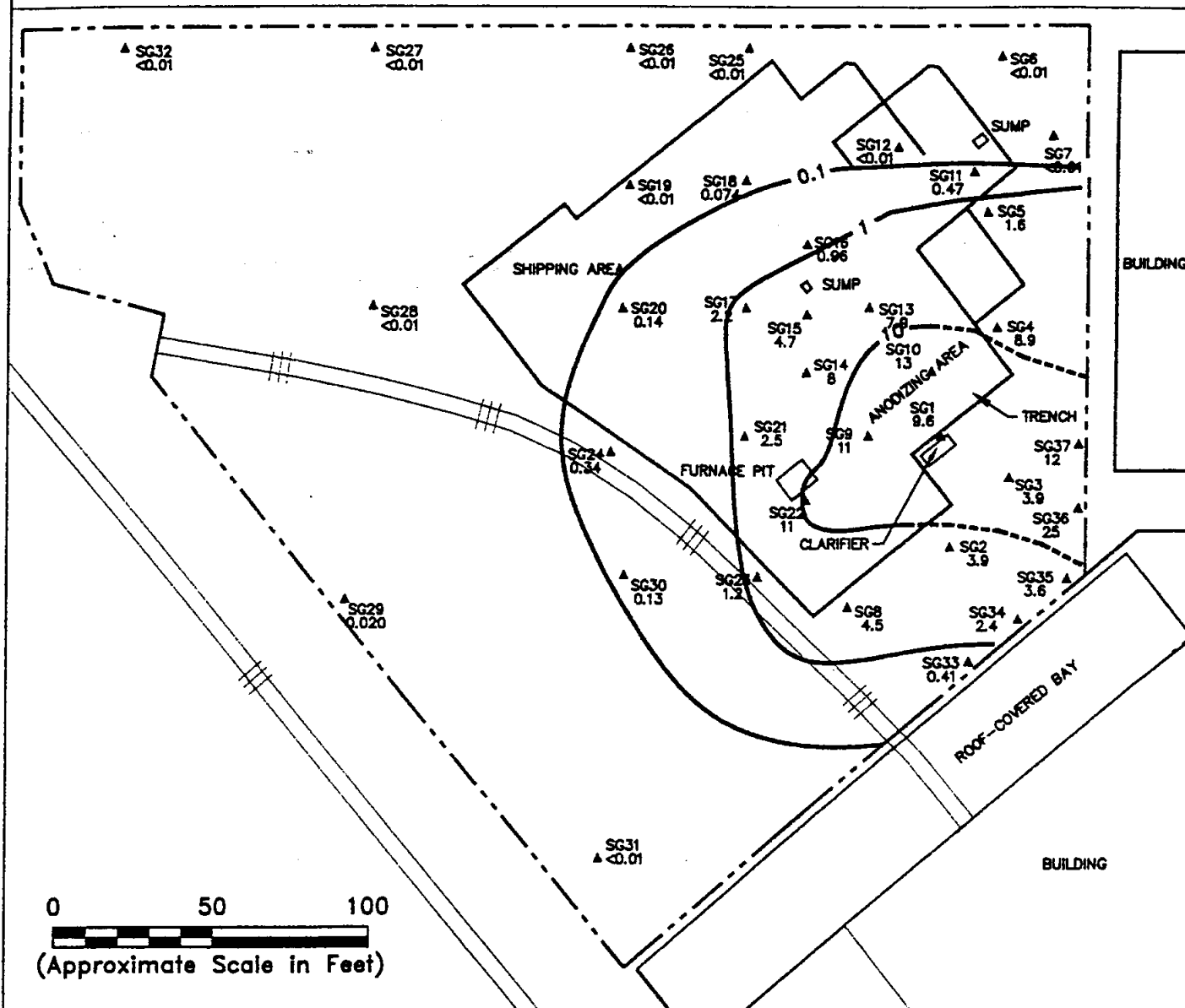
Jervis B. Webb Company  
South Gate, CA

February 1998  
EKL 961025.02

Figure 3



FIRESTONE BOULEVARD



#### LEGEND

- ▲ SOIL GAS SAMPLING LOCATION
- PROPERTY LINE/BOUNDARY
- BUILDING
- |||| RAILROAD SPUR

#### Notes:

1. All locations are approximate.
2. Soil gas concentration contours in units of micrograms per liter by volume in air.

## Erler & Kalinowski, Inc.

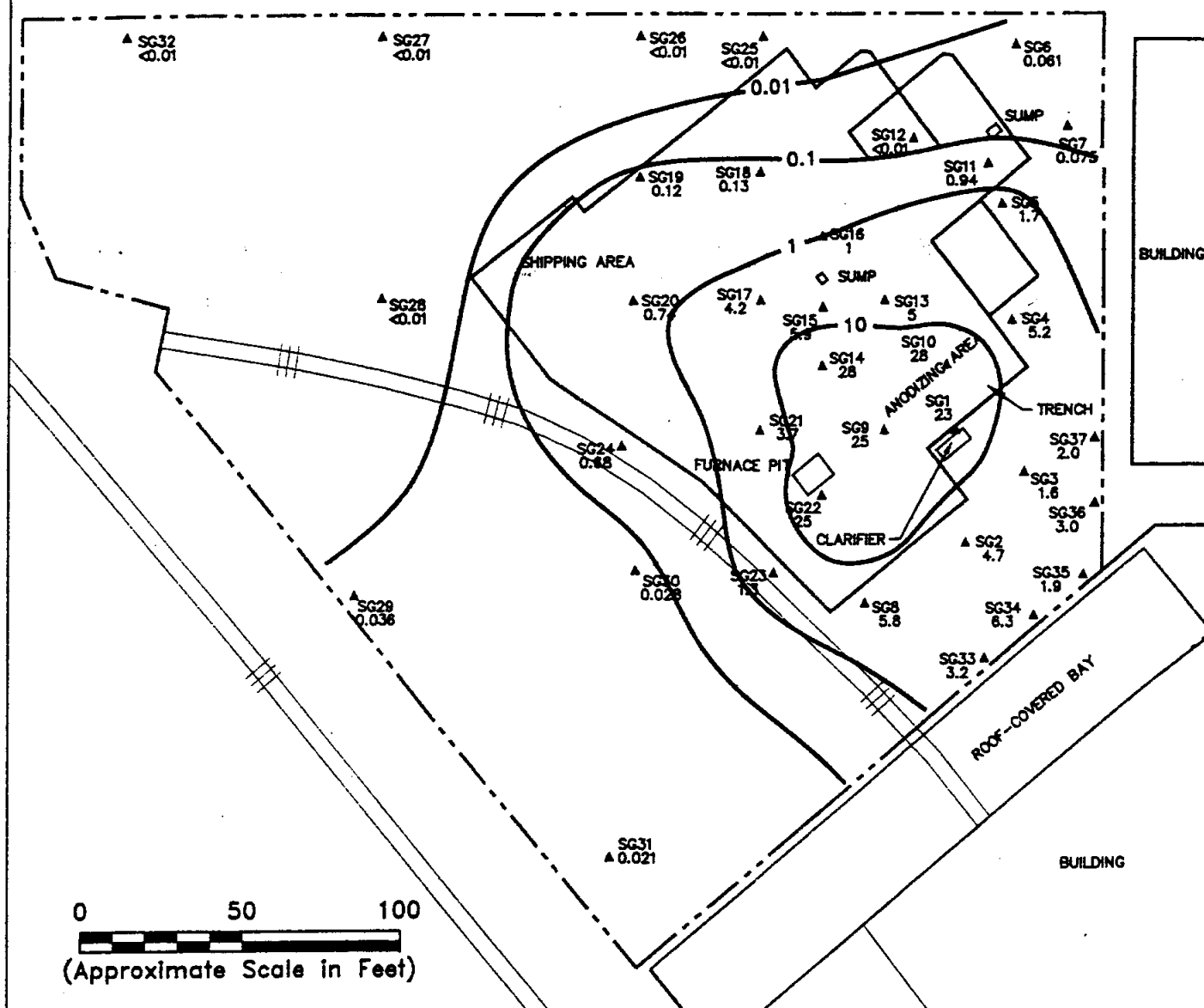
### Concentrations of TCE Detected in Shallow Soil Gas

Jervis B. Webb Company  
South Gate, CA  
February 1998  
EKI 961025.02

Figure 4



FIRESTONE BOULEVARD



0 50 100  
(Approximate Scale in Feet)

#### LEGEND

- ▲ SOIL GAS SAMPLING LOCATION
- PROPERTY LINE/BOUNDARY
- BUILDING
- ||| RAILROAD SPUR

#### Notes:

1. All locations are approximate.
2. Soil gas concentration contours in units of micrograms per liter by volume in air.

**Erler &  
Kalinowski, Inc.**

Concentrations of PCE Detected  
in Shallow Soil Gas

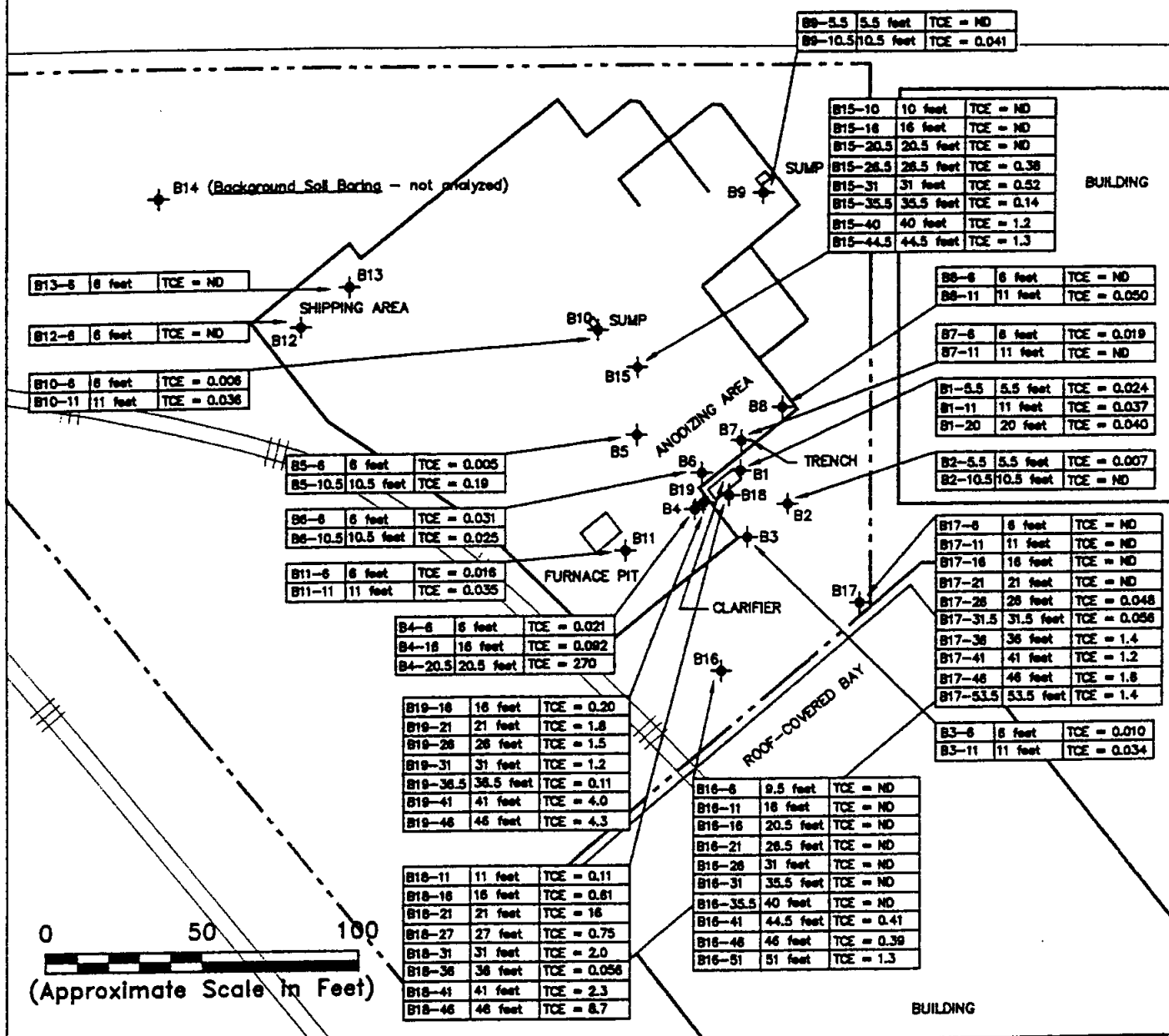
Jervis B. Webb Company  
South Gate, CA  
February 1998  
EKI 961025.02

Figure 5





FIRESTONE BOULEVARD



**Erler &  
Kalinowski, Inc.**

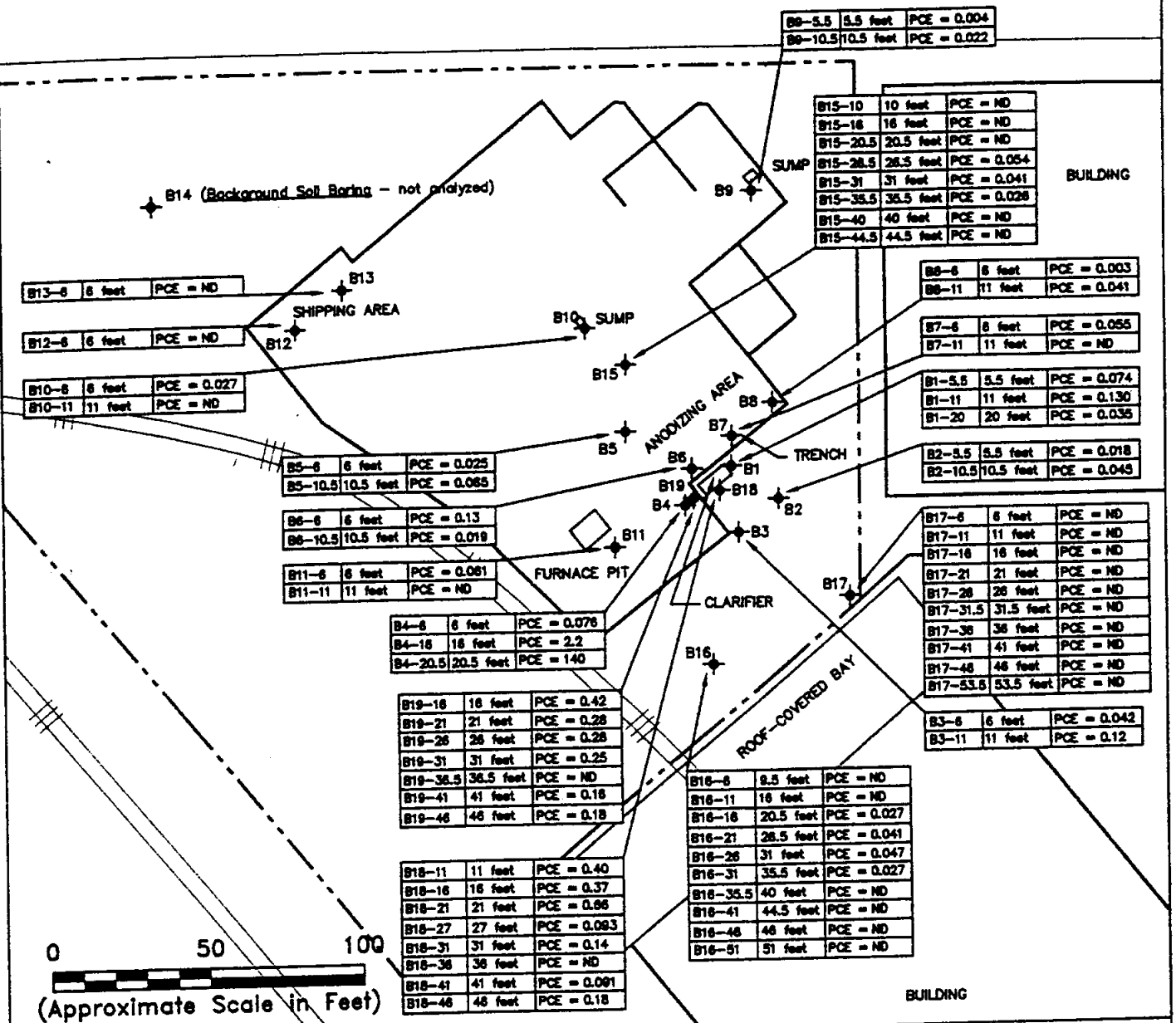
Concentrations of TCE  
Detected in Soil

Jervis B. Webb Company  
South Gate, CA  
February 1998  
EKI 961025.02

Figure 7



FIRESTONE BOULEVARD



## LEGEND

- LOCATION OF SOIL BORING
- PROPERTY LINE/BOUNDARY
- BUILDING
- RAILROAD SPUR

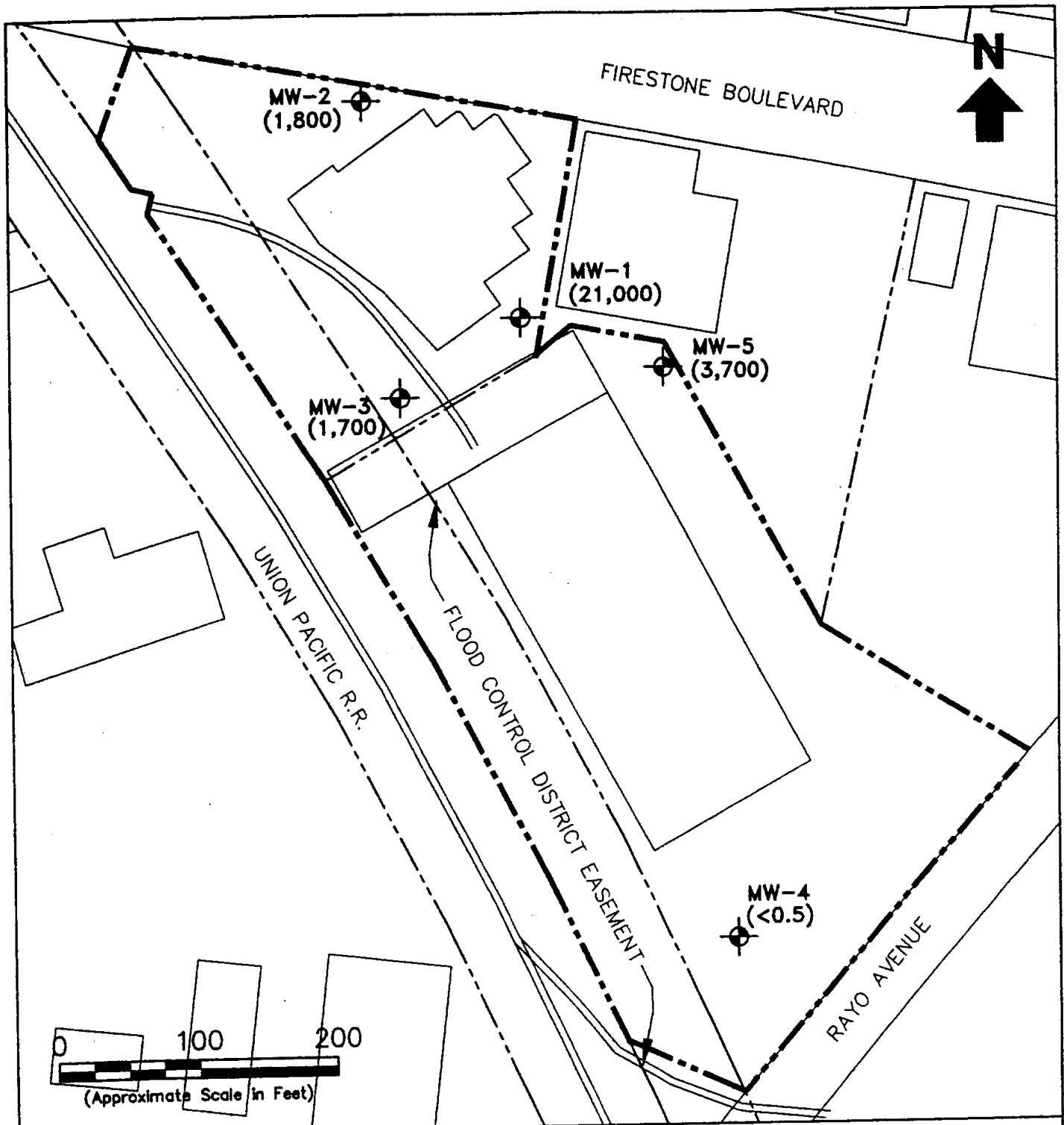
## Notes:

- All locations are approximate.
- Soil boring B4 installed at approximately 15 degrees angle from vertical in the direction of the base of the clarifier. Boring terminated beneath the clarifier.
- See laboratory report for results of additional analyses.
- Concentrations of volatile organic compounds ("VOCs") reported in units of micrograms per kilogram. Concentrations shown in units of milligrams per kilogram ("mg/kg"). "ND" indicates non-detection above method detection limits. Some concentrations rounded to nearest 0.001 mg/kg.

**Erler & Kallnowski, Inc.**

Concentrations of PCE  
Detected in Soil

Jervis B. Webb Company  
South Gate, CA  
February 1998  
EKI 961025.02  
Figure 8



### LEGEND

- Property Line/Site Boundary
- ⊕ Groundwater Monitoring Well

### Notes:

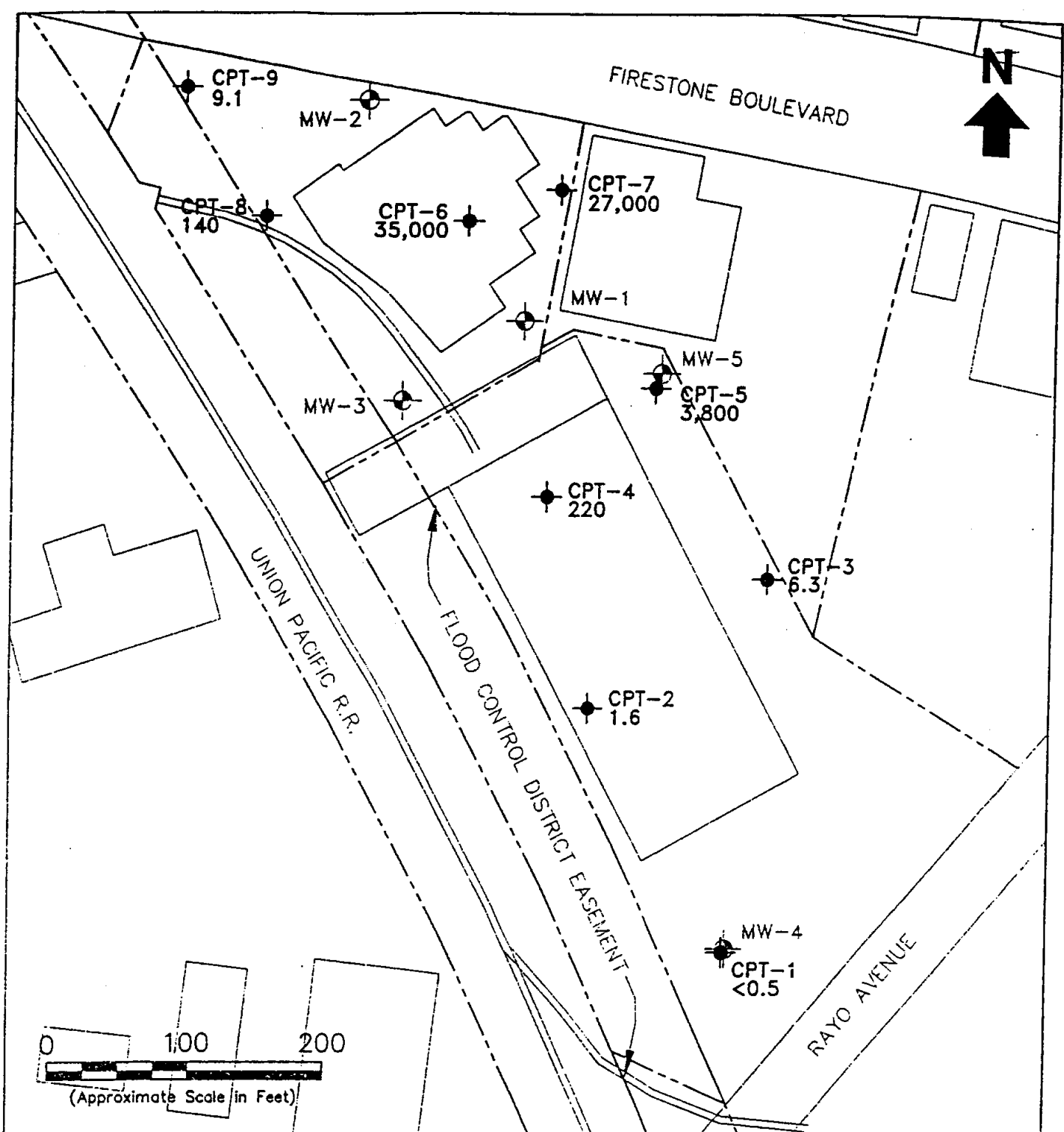
1. All locations are approximate.
2. Groundwater samples were collected on 7 September 2000.
3. Concentrations shown in units of micrograms per liter.

**Erler &  
Kalinowski, Inc.**

Concentrations of Trichloroethene  
Detected in Groundwater Samples

Jervis B. Webb Company of California  
South Gate, California  
October 2000  
EKI 991103.01

Figure 6



# **LEGEND**

- PIPP Groundwater Sample Location
- Groundwater Monitoring Well
- Property Line/Boundary

## **Notes:**

1. All locations are approximate.
2. Concentrations shown in units of micrograms per liter.

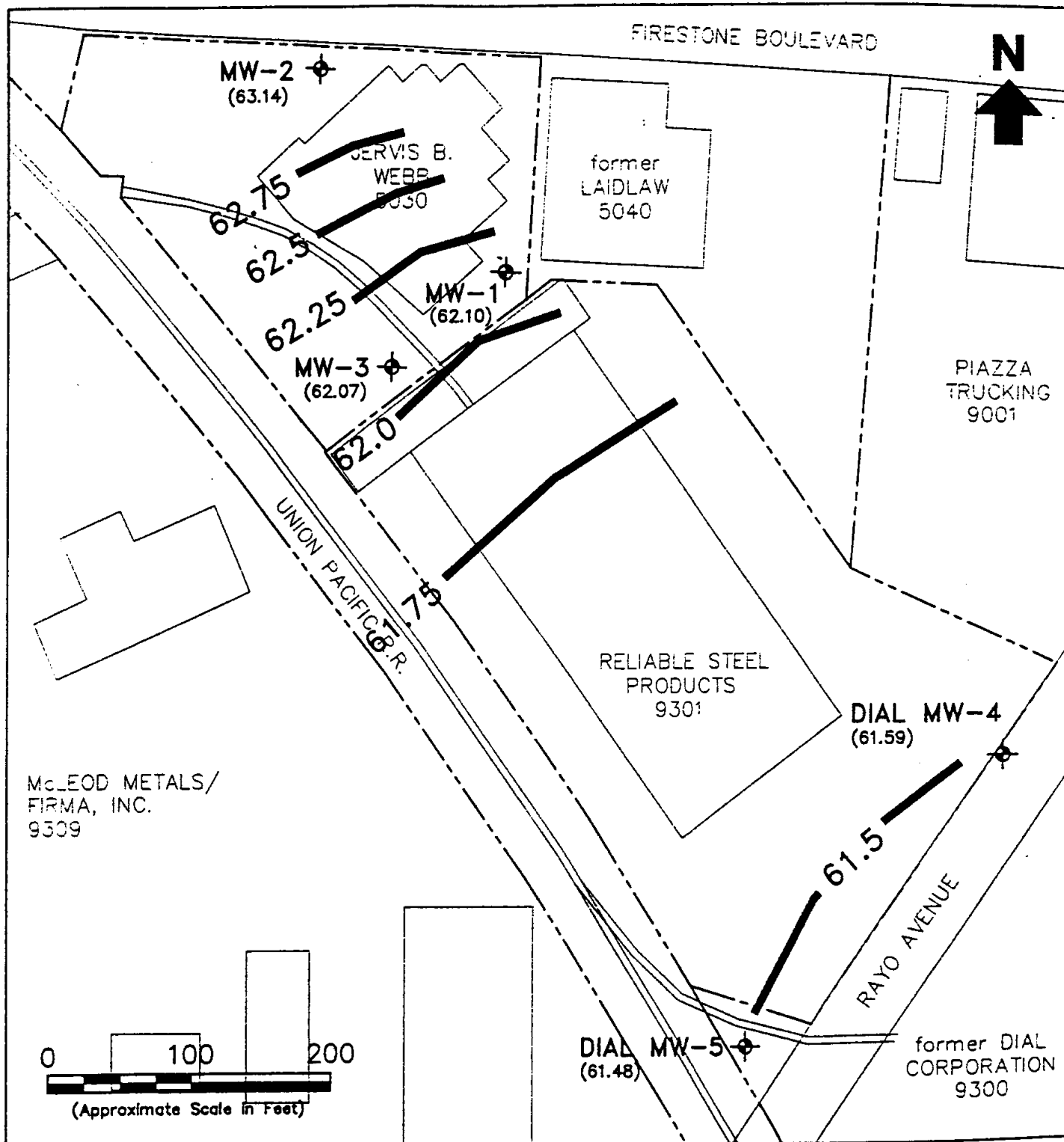
**Erler &  
Kalinowski, Inc.**

Concentrations of Trichloroethene  
Detected in PIPP  
Groundwater Samples




Jervis B. Webb Company  
South Gate, California

January 1999  
EKI 961025.02

Figure 6



### LEGEND

-  Contour Representing the Elevation of the Groundwater Table in Feet Above Mean Sea Level
-  Groundwater Monitoring Well
-  Property Line/Boundary

### Notes:

1. All locations are approximate.

**Erler & Kallnowski, Inc.**

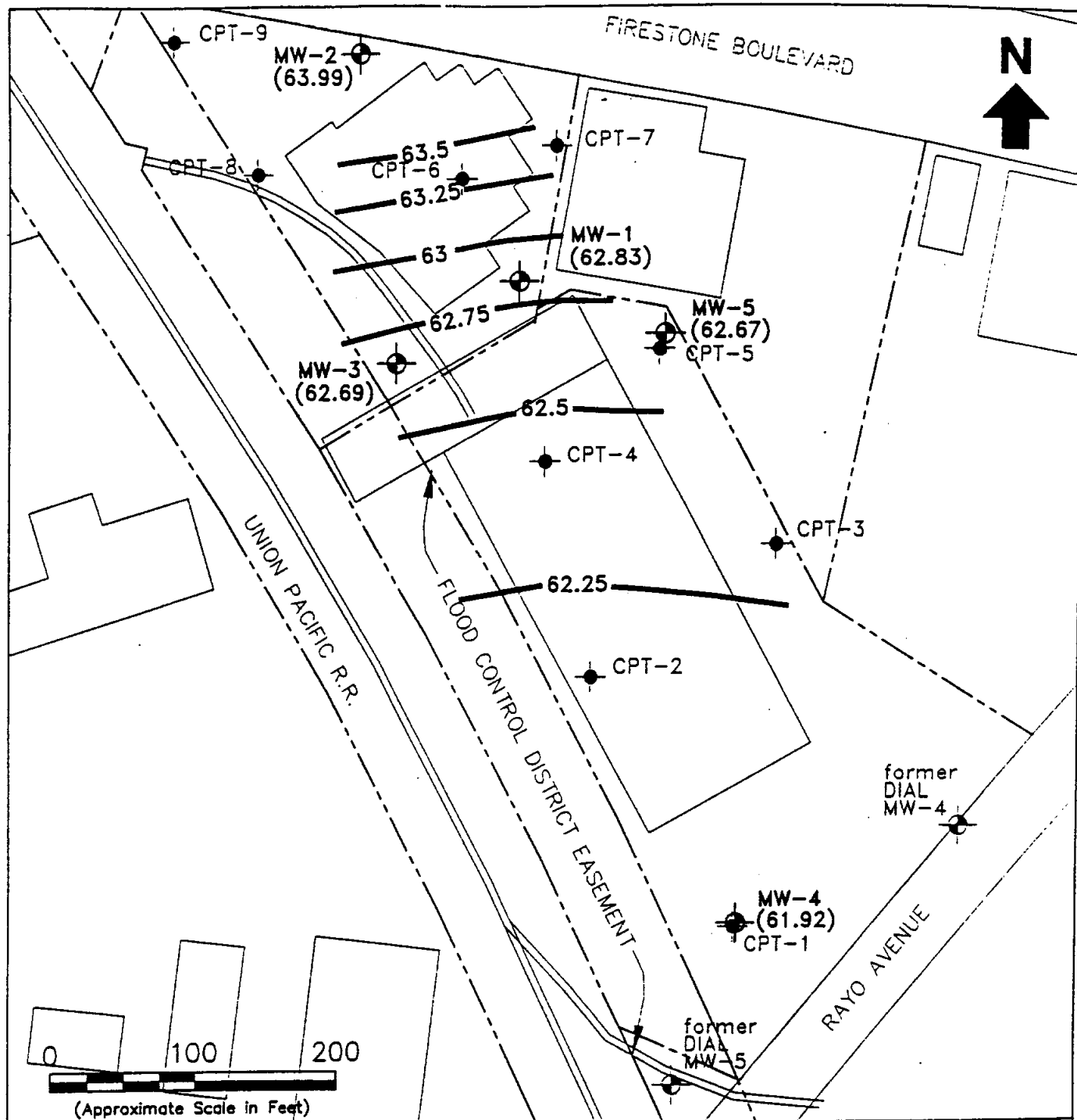
Elevation of the Groundwater Table  
on 20 May 1998

Jervis B. Webb Company  
South Gate, California

June 1998

EKI 961025.02

Figure 3



## LEGEND

- Contour Representing the Elevation of the Groundwater Table in Feet Above Mean Sea Level (msl)
- MW-3 (62.61) Groundwater Monitoring Well with Groundwater Elevation (msl)
- Former DIAL Monitoring Well
- PIPP Groundwater Sample Location
- Property Line/Boundary

## Notes:

1. All locations are approximate.
2. Information related to PIPP groundwater sampling and monitoring at the former DIAL wells is provided in Additional Groundwater Investigation and Quarterly Monitoring Report, by Erler & Kalinowski, Inc., dated 13 January 1999 and Adjacent Property Review report, by Emcon Associates, dated 2 November 1995, respectively.

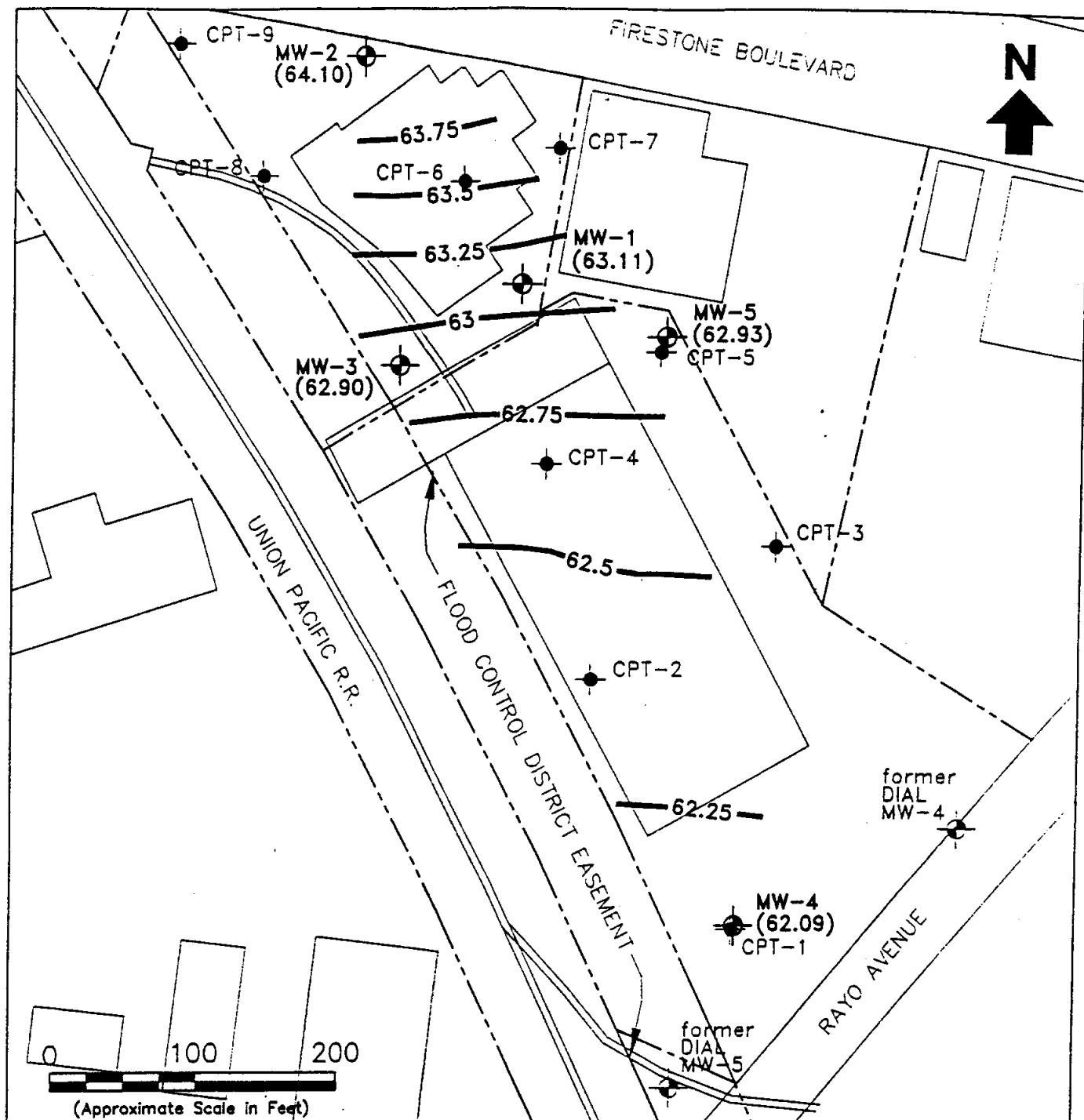
**Erler & Kalinowski, Inc.**

Elevation of the Groundwater Table On 19 January 1999

Jervis B. Webb Company  
South Gate, California

June 1999  
EKI 961025.02

Figure 3



## LEGEND

- Contour Representing the Elevation of the Groundwater Table in Feet Above Mean Sea Level (msl)
- Groundwater Monitoring Well with Groundwater Elevation (msl)
- Former DIAL Monitoring Well
- PIPP Groundwater Sample Location
- Property Line/Boundary

## Notes:

- All locations are approximate.
- Information related to PIPP groundwater sampling and monitoring at the former DIAL wells is provided in Additional Groundwater Investigation and Quarterly Monitoring Report, by Erler & Kalinowski, Inc., dated 13 January 1999 and Adjacent Property Review report, by Emcon Associates, dated 2 November 1995, respectively.

**Erler &  
Kalinowski, Inc.**

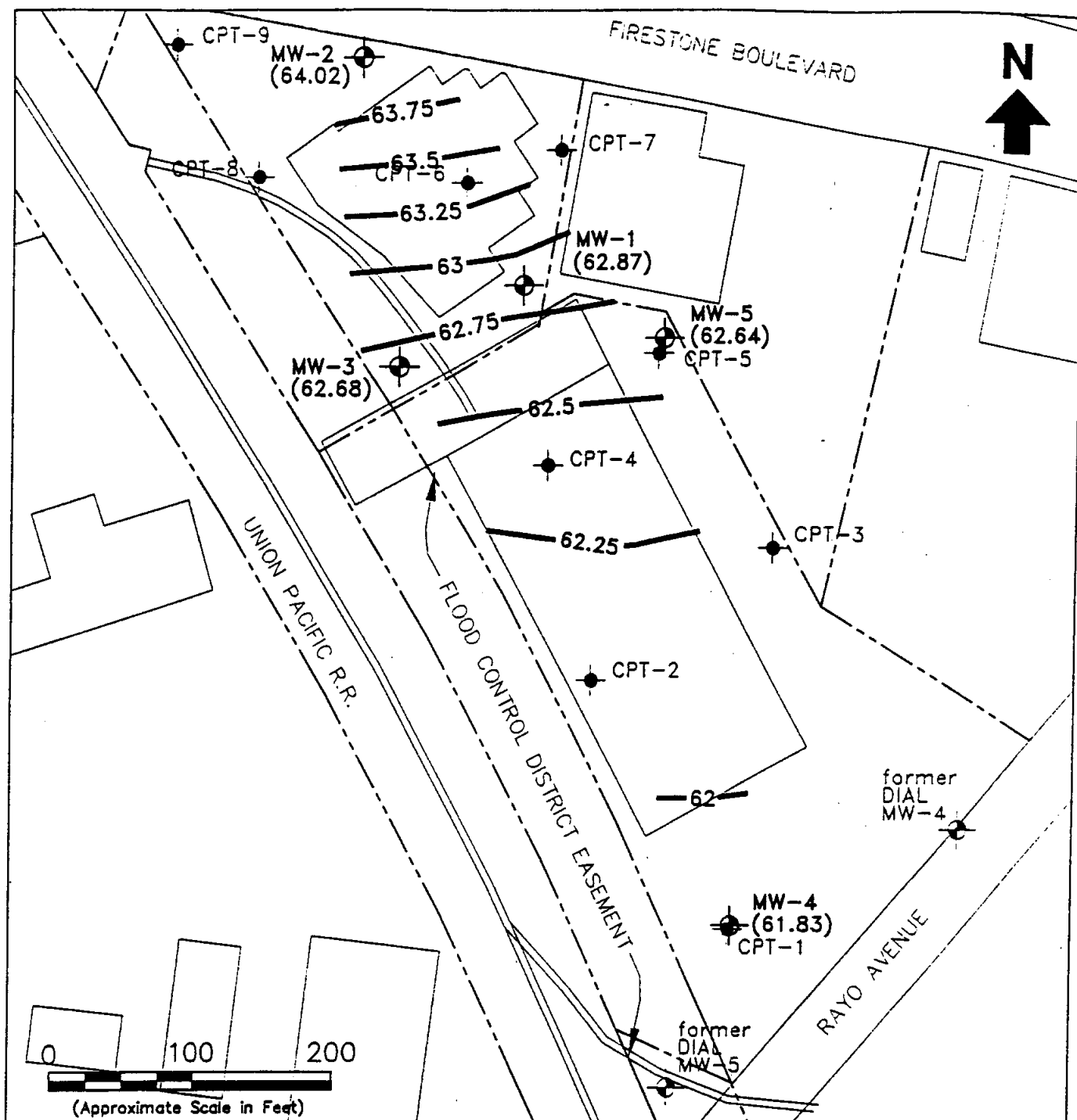
Elevation of the Groundwater  
Table On 3 February 1999

Jervis B. Webb Company  
South Gate, California

June 1999

EKI 961025.02

Figure 4



## LEGEND

- Contour Representing the Elevation of the Groundwater Table in Feet Above Mean Sea Level (msl)
- Groundwater Monitoring Well with Groundwater Elevation (msl)
- Former DIAL Monitoring Well
- PIPP Groundwater Sample Location
- Property Line/Boundary

## Notes:

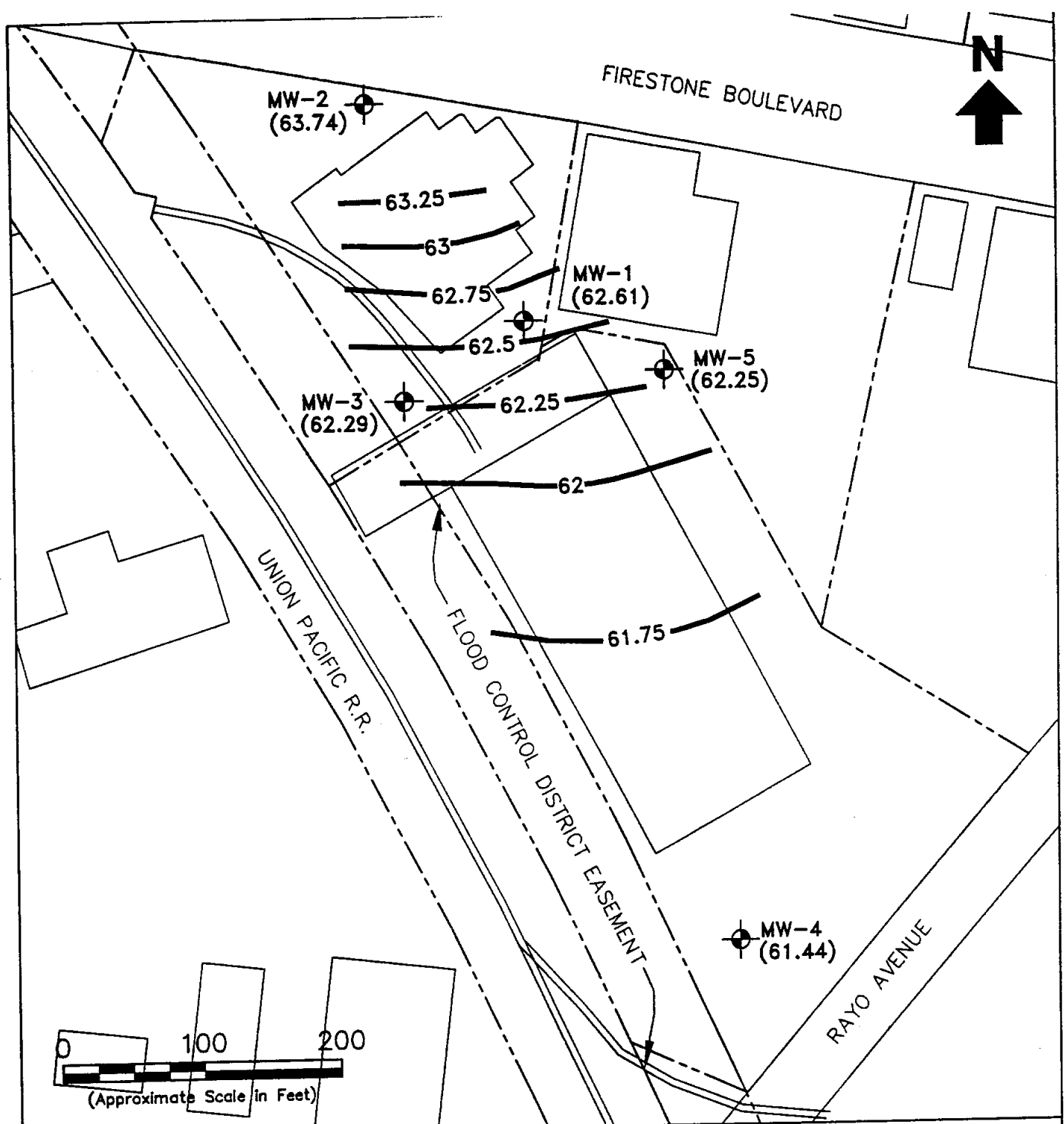
1. All locations are approximate.
2. Information related to PIPP groundwater sampling and monitoring at the former DIAL wells is provided in Additional Groundwater Investigation and Quarterly Monitoring Report, by Erler & Kalinowski, Inc., dated 13 January 1999 and Adjacent Property Review report, by Emcon Associates, dated 2 November 1995, respectively.

**Erler & Kalinowski, Inc.**


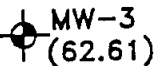

Elevation of the Groundwater Table On 30 March 1999

Jervis B. Webb Company  
South Gate, California  
June 1999  
EKI 961025.02  
Figure 5





# **LEGEND**

-  Contour Representing the Elevation of the Groundwater Table in Feet Above Mean Sea Level (msl)
-  Groundwater Monitoring Well with Groundwater Elevation (msl)
-  Property Line/Boundary

## **Notes:**

1. All locations are approximate.

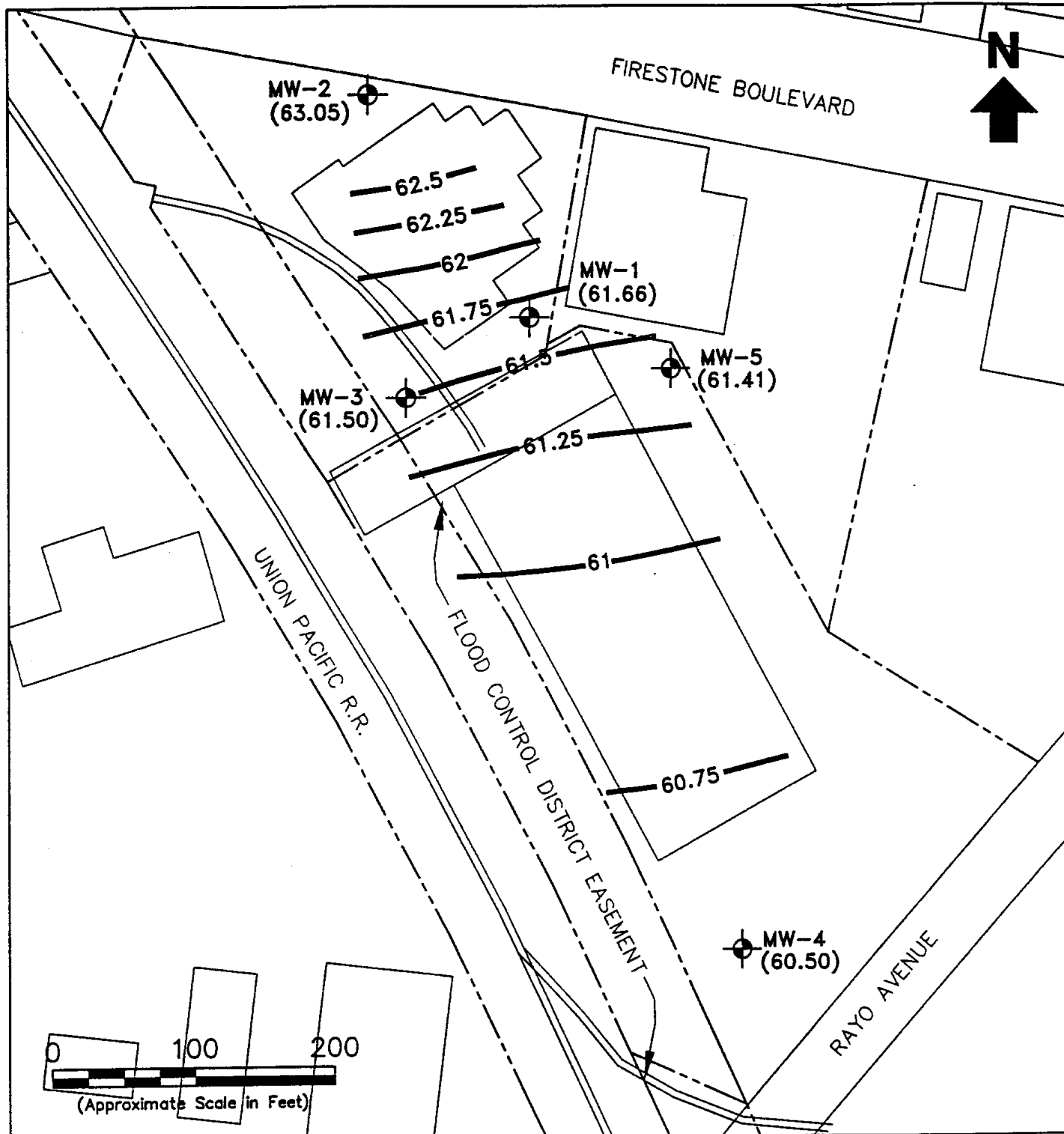
**Erler & Kalinowski, Inc.**

Elevation of the Groundwater Table on 1 June 1999

Jervis B. Webb Company  
South Gate, California

July 1999  
EKI 961025.04

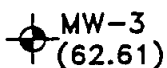
**Figure 3**



# **LEGEND**



Contour Representing the Elevation of the Groundwater Table in Feet Above Mean Sea Level (msl)



Groundwater Monitoring Well with Groundwater Elevation (msl)



Property Line/Boundary

## **Notes:**

1. All locations are approximate.

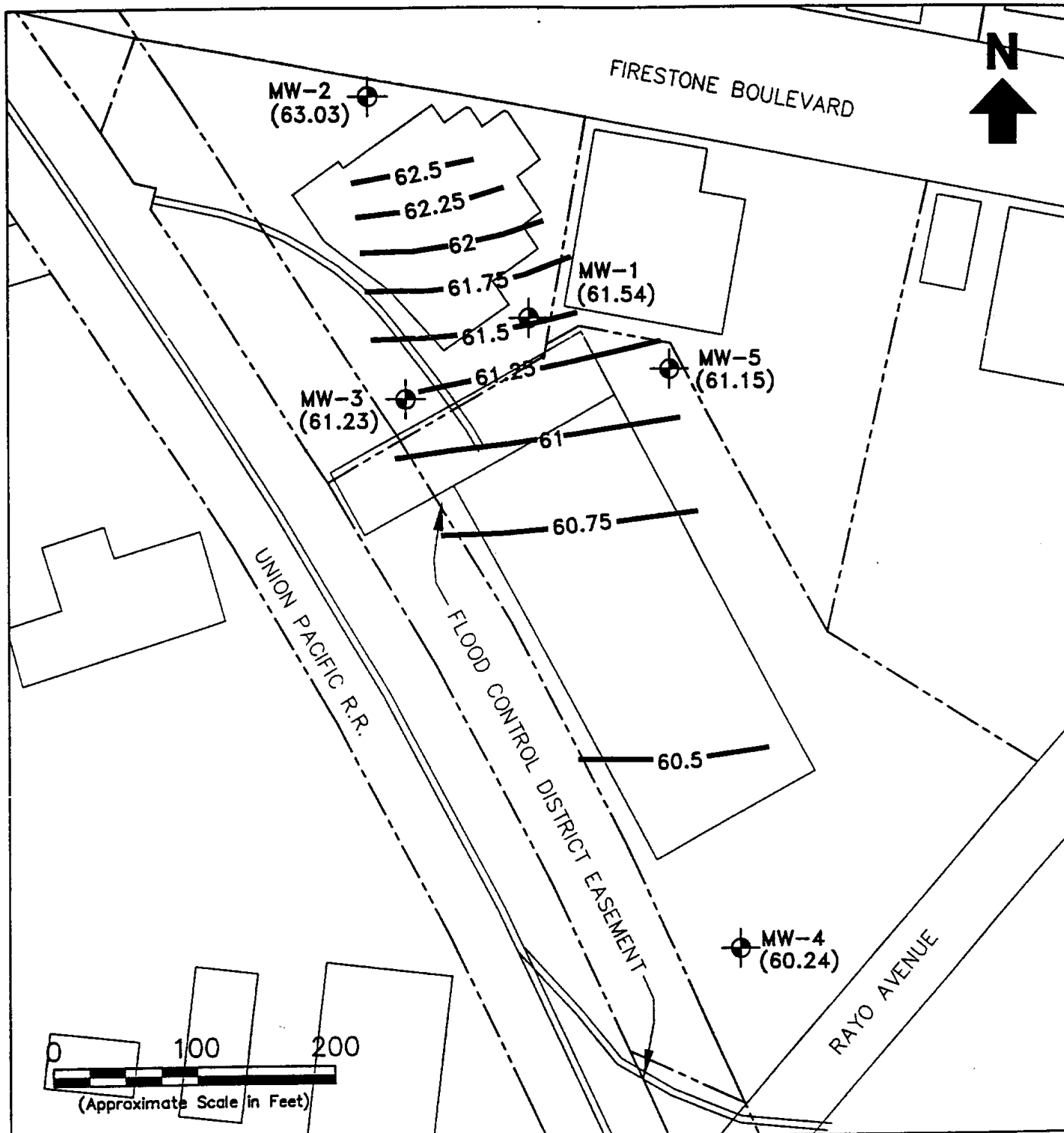
**Erler & Kalinowski, Inc.**

Elevation of the Groundwater Table on 18 October 1999

Jervis B. Webb Company of California  
South Gate, California

February 2000  
EKI 991103.01

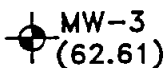
Figure 3



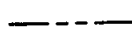
# **LEGEND**



Contour Representing the Elevation of the Groundwater Table in Feet Above Mean Sea Level (msl)



Groundwater Monitoring Well with Groundwater Elevation (msl)



Property Line/Boundary

## **Notes:**

1. All locations are approximate.

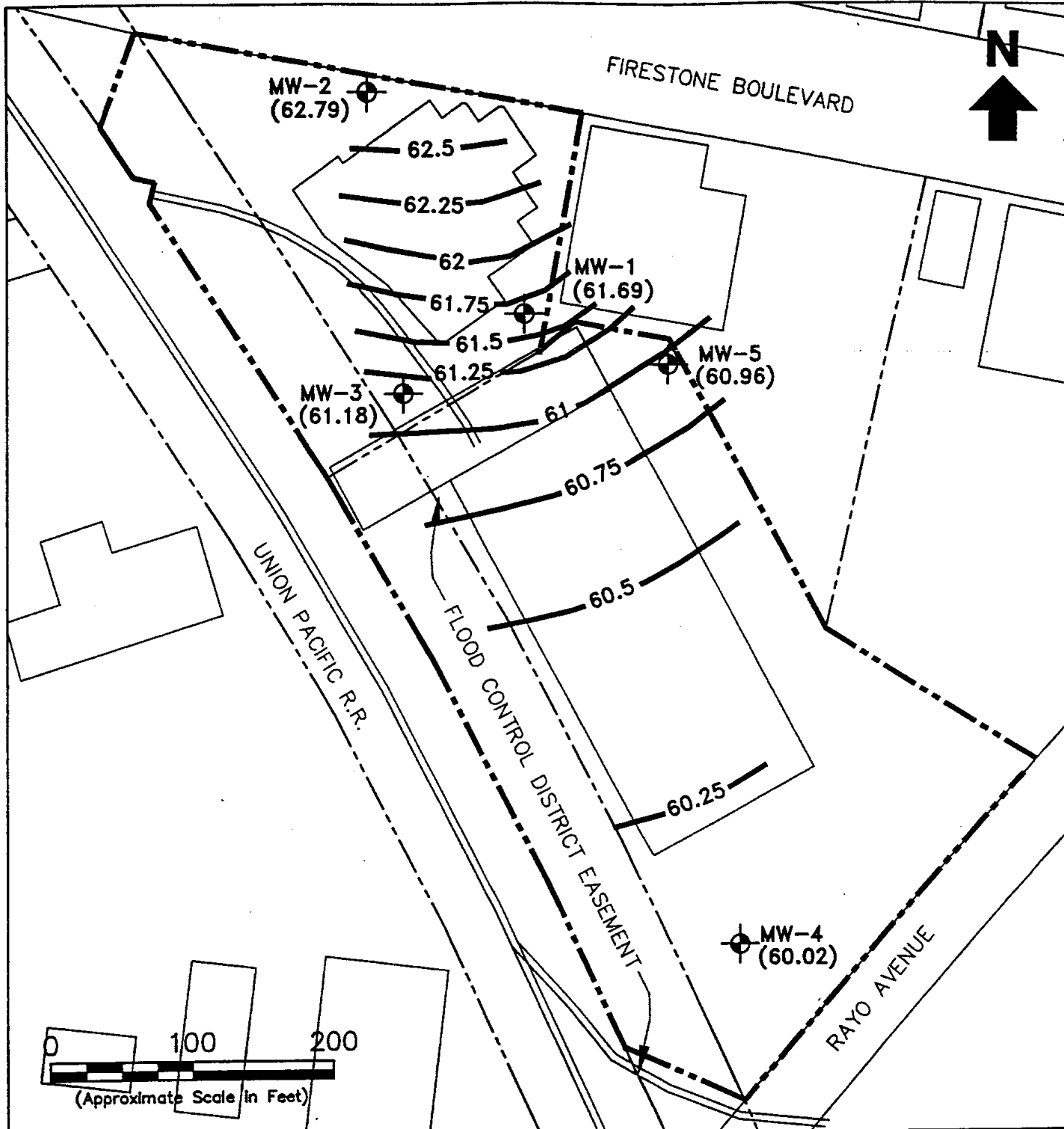
**Erler & Kalinowski, Inc.**

Elevation of the Groundwater Table on 8 December 1999


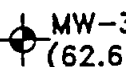

Jervis B. Webb Company of California  
South Gate, California

February 2000  
EKI 991103.01

Figure 4



# **LEGEND**

-  Contour Representing the Elevation of the Groundwater Table in Feet Above Mean Sea Level (msl)
-  MW-3 (62.61) Groundwater Monitoring Well with Groundwater Elevation (msl)
-  Property Line/Site Boundary

## **Notes:**

1. All locations are approximate.

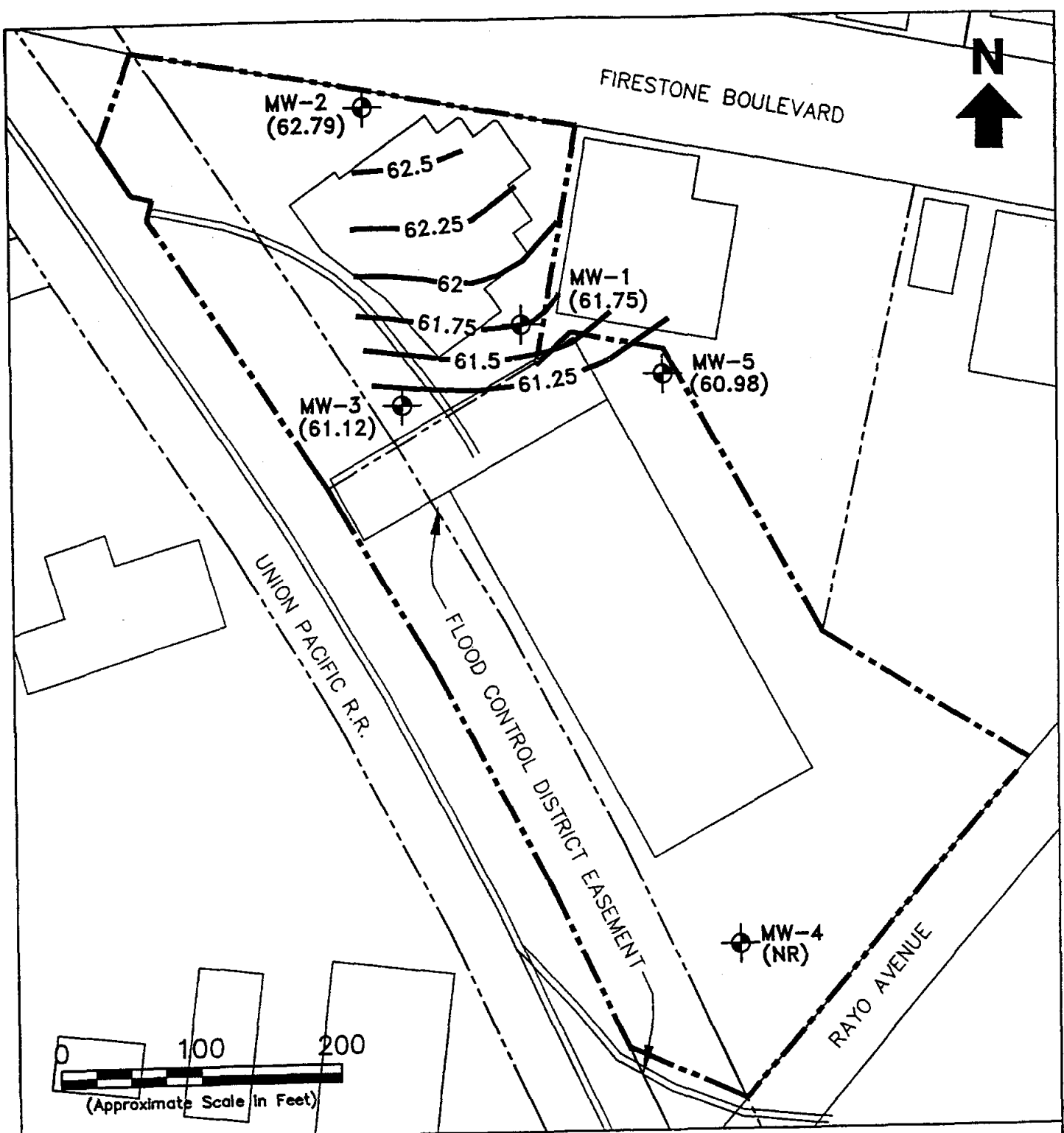
**Erler &  
Kalinowski, Inc.**

Elevation of the Groundwater  
Table on 27 January 2000




Jervis B. Webb Company of California  
South Gate, California

April 2000  
EKI 991103.01

**Figure 3**



### LEGEND

-  Contour Representing the Elevation of the Groundwater Table in Feet Above Mean Sea Level (msl)
-  MW-3 (62.61) Groundwater Monitoring Well with Groundwater Elevation (msl)
-  Property Line/Site Boundary

### Notes:

1. All locations are approximate.

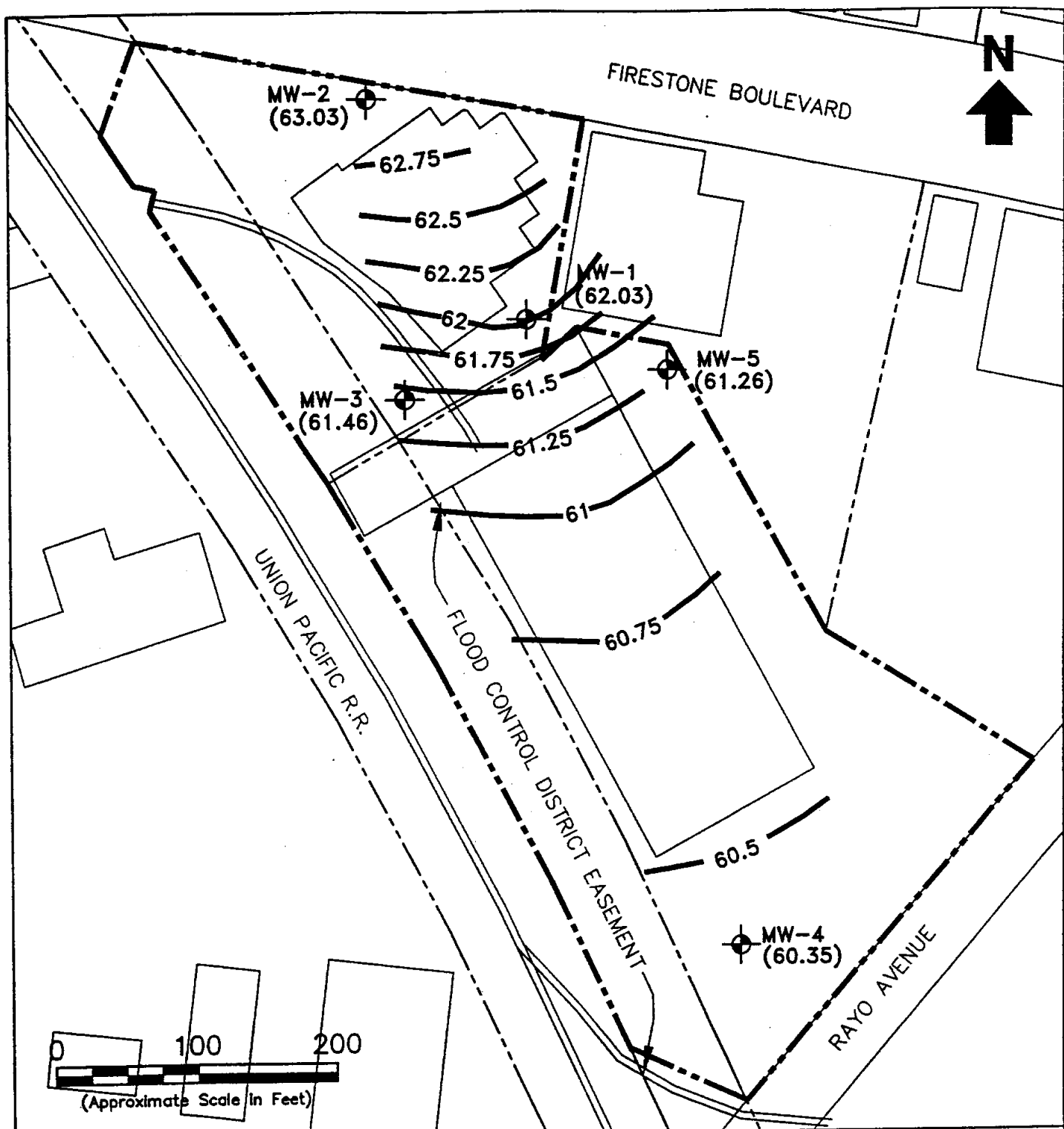
**Erler & Kalinowski, Inc.**

Elevation of the Groundwater Table on 28 February 2000




Jervis B. Webb Company of California  
South Gate, California

April 2000  
EKI 991103.01

**Figure 4**



#### LEGEND

-  Contour Representing the Elevation of the Groundwater Table in Feet Above Mean Sea Level (msl)
-  MW-3 (62.61) Groundwater Monitoring Well with Groundwater Elevation (msl)
-  Property Line/Site Boundary

#### Notes:

1. All locations are approximate.

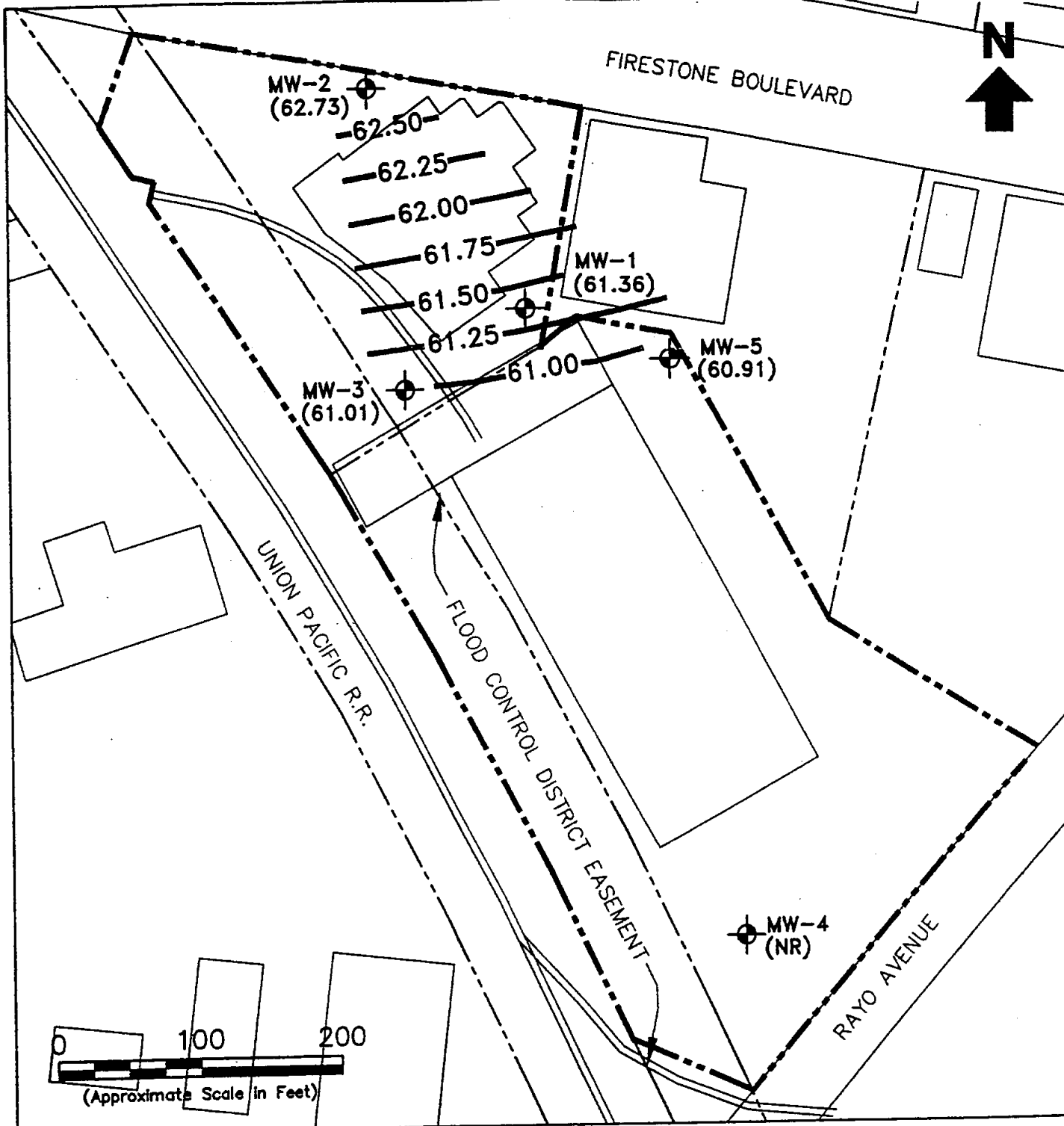
**Erler &  
Kalinowski, Inc.**

Elevation of the Groundwater  
Table on 15 March 2000

Jervis B. Webb Company of California  
South Gate, California

April 2000  
EKI 991103.01

Figure 5



### LEGEND

- Contour Representing the Elevation of the Groundwater Table in Feet Above Mean Sea Level (msl)
- MW-3 (62.61) Groundwater Monitoring Well with Groundwater Elevation (msl)
- Property Line/Site Boundary

### Notes:

1. All locations are approximate.
2. NR = Not Recorded

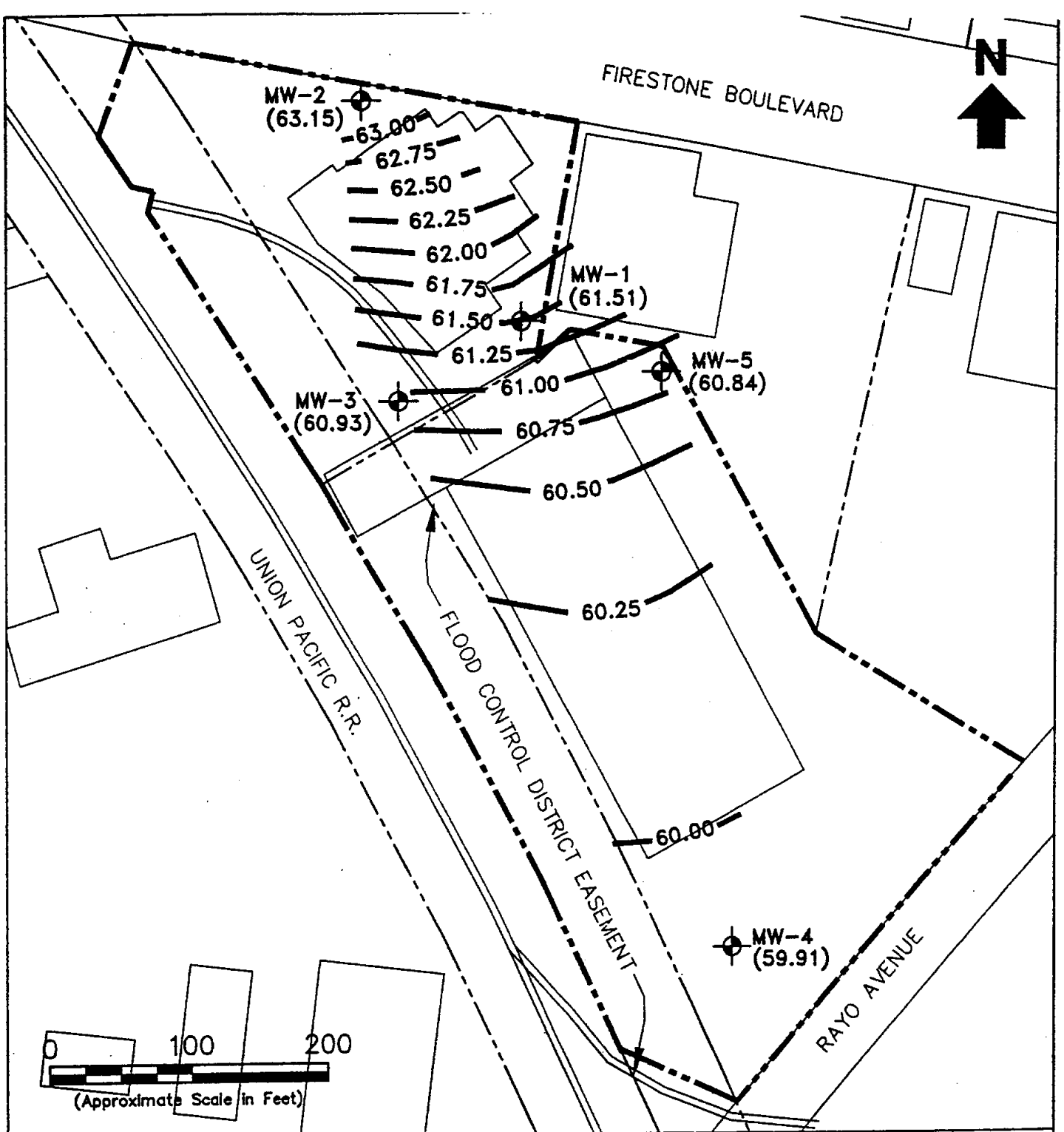
**Erler & Kalinowski, Inc.**

Elevation of the Groundwater Table on 13 April 2000


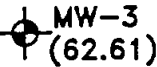

Jervis B. Webb Company of California  
South Gate, California

August 2000  
EKI 991103.01

Figure 3



### LEGEND

-  Contour Representing the Elevation of the Groundwater Table in Feet Above Mean Sea Level (msl)
-  MW-3 (62.61) Groundwater Monitoring Well with Groundwater Elevation (msl)
-  Property Line/Site Boundary

### Notes:

1. All locations are approximate.

**Erler & Kalnowski, Inc.**

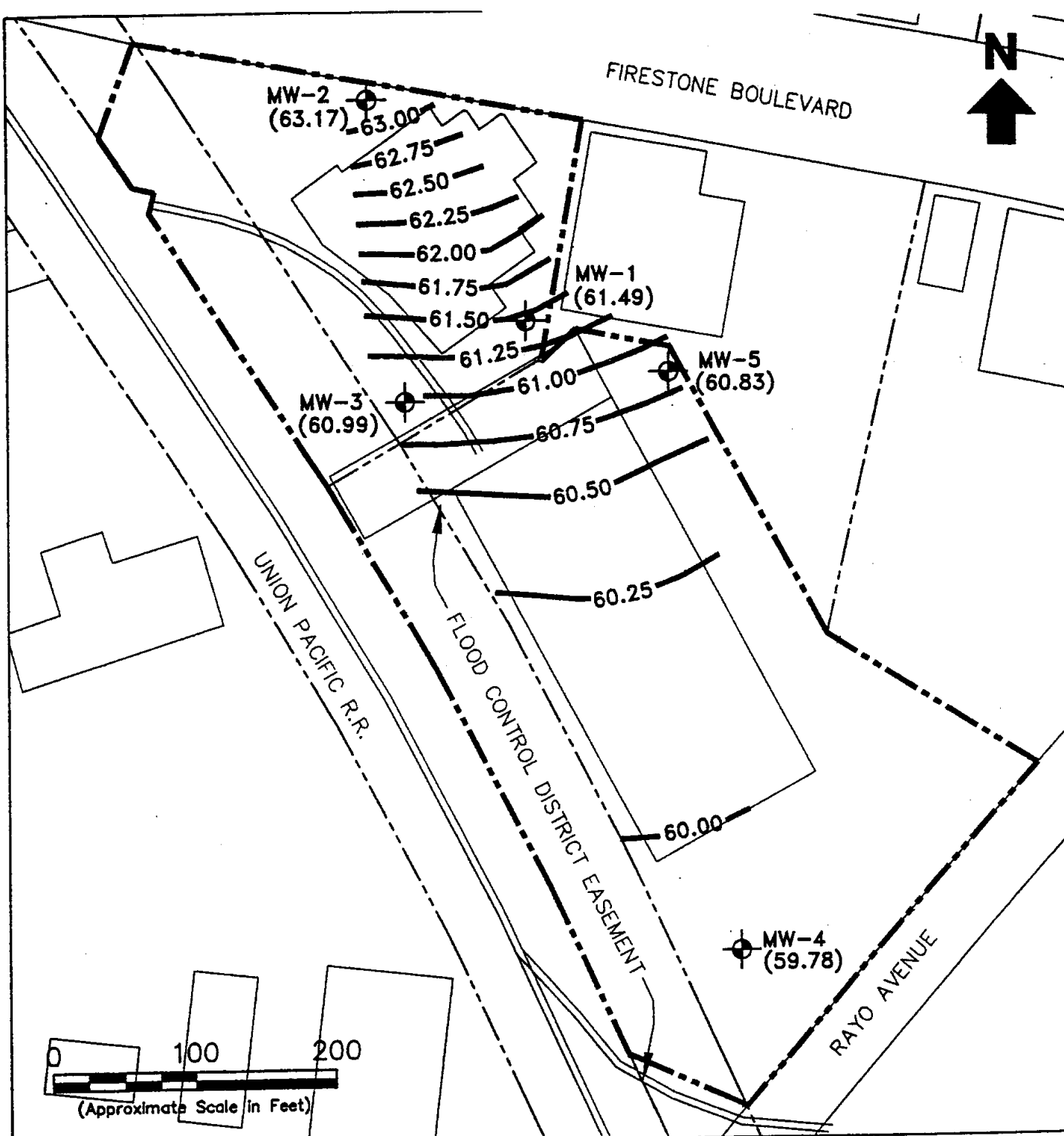
Elevation of the Groundwater Table on 18 May 2000

Jervis B. Webb Company of California  
South Gate, California




August 2000  
EKI 991103.01

Figure 4





### LEGEND

-  Contour Representing the Elevation of the Groundwater Table in Feet Above Mean Sea Level (msl)
-  MW-3 (62.61) Groundwater Monitoring Well with Groundwater Elevation (msl)
-  Property Line/Site Boundary

### Notes:

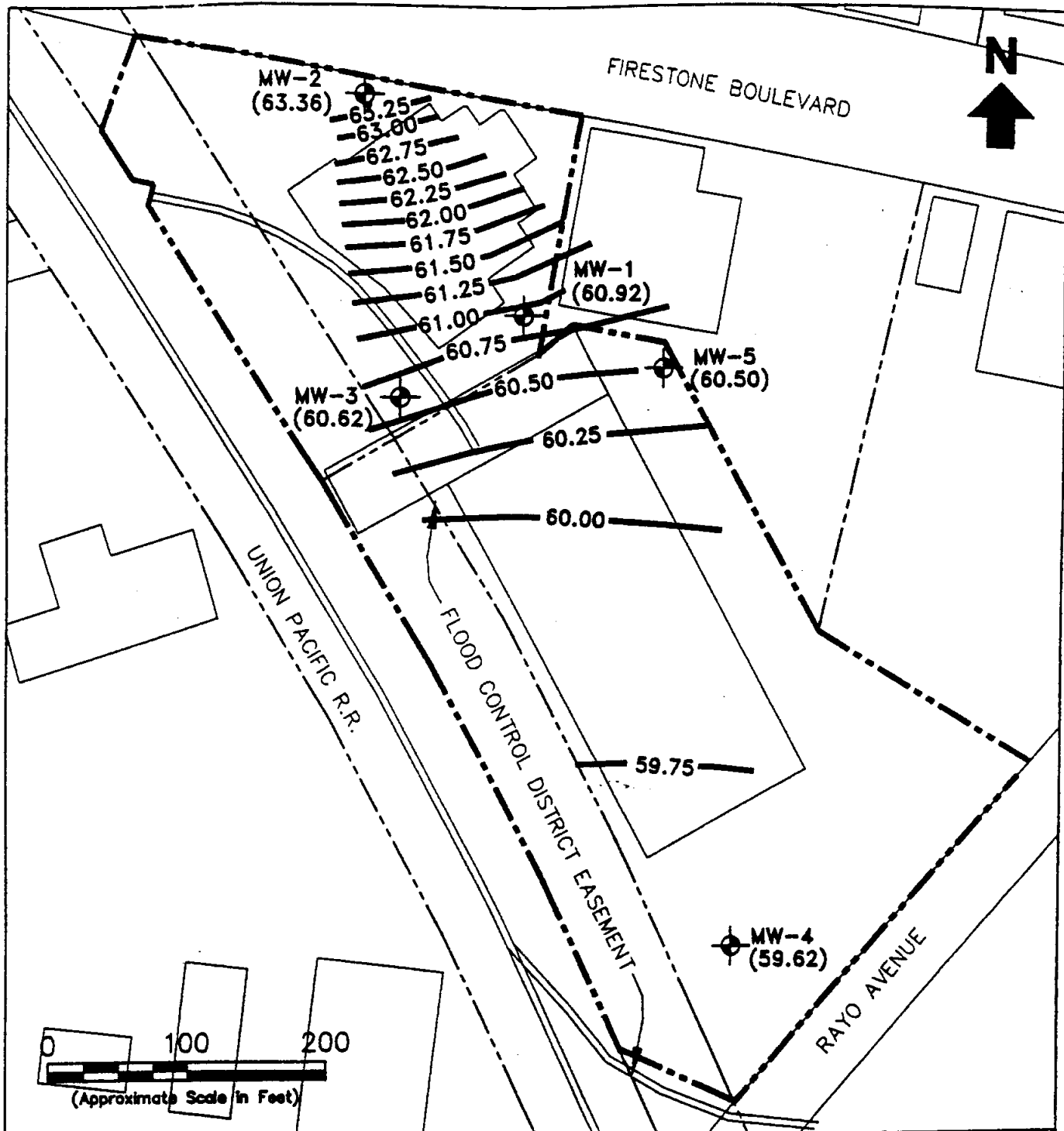
1. All locations are approximate.

**Erler &  
Kalinowski, Inc.**

Elevation of the Groundwater  
Table on 20 June 2000

Jervis B. Webb Company of California  
South Gate, California  
August 2000  
EKL 991103.01

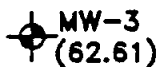
**Figure 5**



### LEGEND



Contour Representing the Elevation of the Groundwater Table in Feet Above Mean Sea Level (msl)



MW-3 (62.61) Groundwater Monitoring Well with Groundwater Elevation (msl)



Property Line/Site Boundary

### Notes:

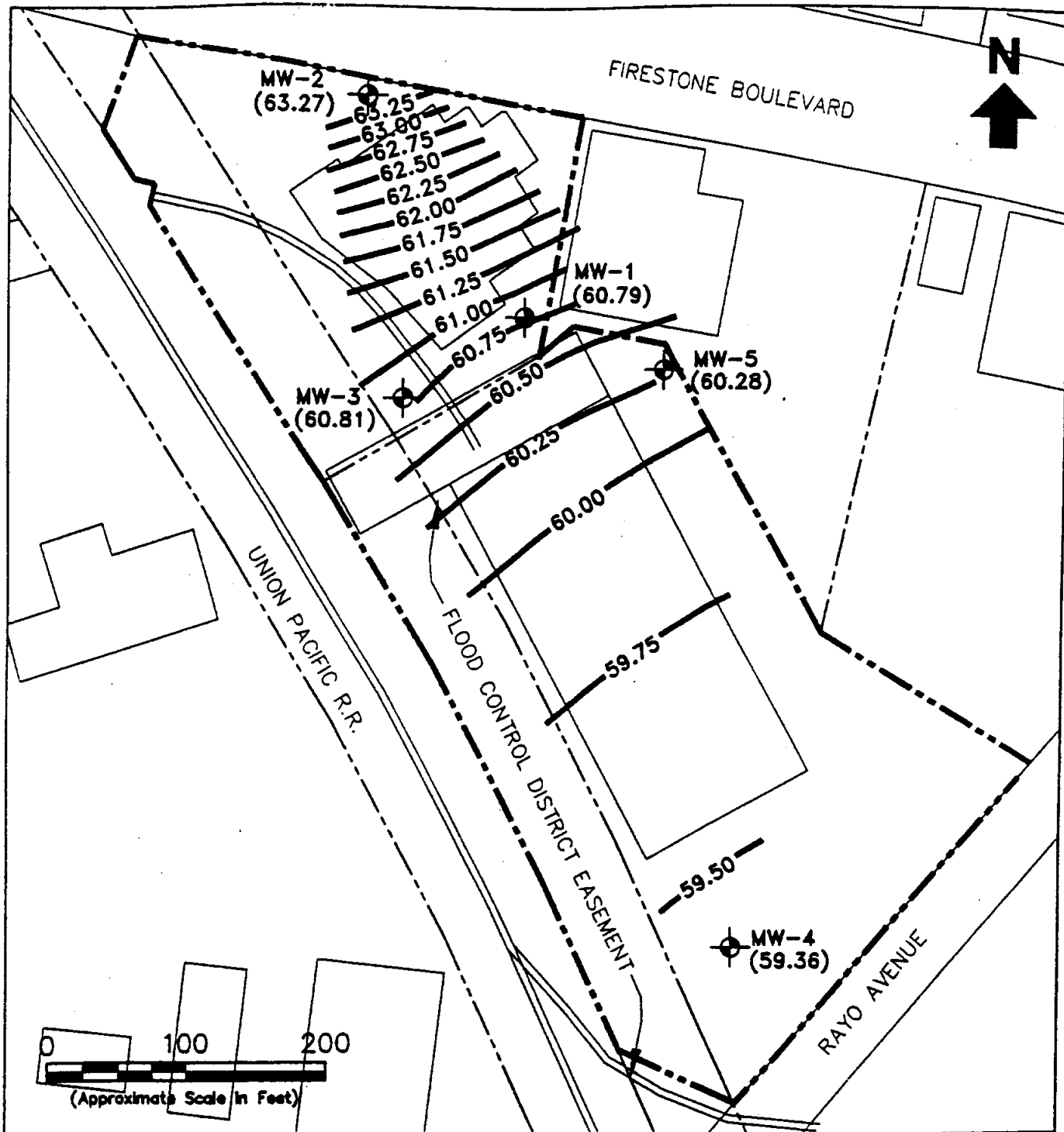
1. All locations are approximate.
2. NR = Not Recorded

**Erler & Kallnowski, Inc.**

Elevation of the Groundwater Table on 13 July 2000

Jervis B. Webb Company of California  
South Gate, California  
October 2000  
EKI 991103.01

Figure 3



### LEGEND

Contour Representing the Elevation of the Groundwater Table in Feet Above Mean Sea Level (msl)

MW-3 (62.61) Groundwater Monitoring Well with Groundwater Elevation (msl)

Property Line/Site Boundary

### Notes:

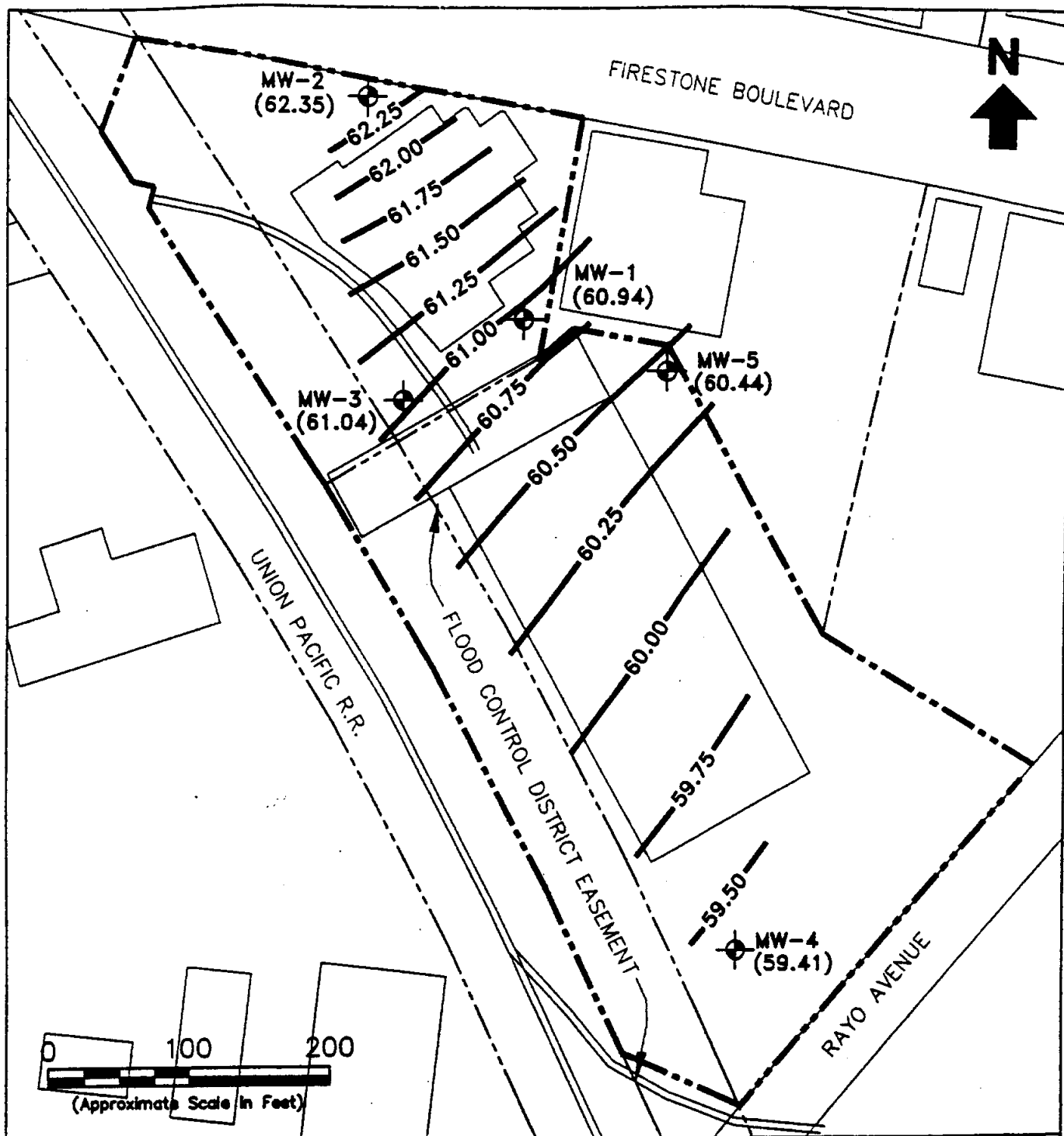
1. All locations are approximate.
2. NR = Not Recorded

**Erler & Kallnowski, Inc.**

Elevation of the Groundwater Table on 17 August 2000

Jervis B. Webb Company of California  
South Gate, California  
October 2000  
EKI 991103.01

Figure 4



### LEGEND

- Contour Representing the Elevation of the Groundwater Table in Feet Above Mean Sea Level (msl)
- MW-3 (62.61) Groundwater Monitoring Well with Groundwater Elevation (msl)
- Property Line/Site Boundary

### Notes:

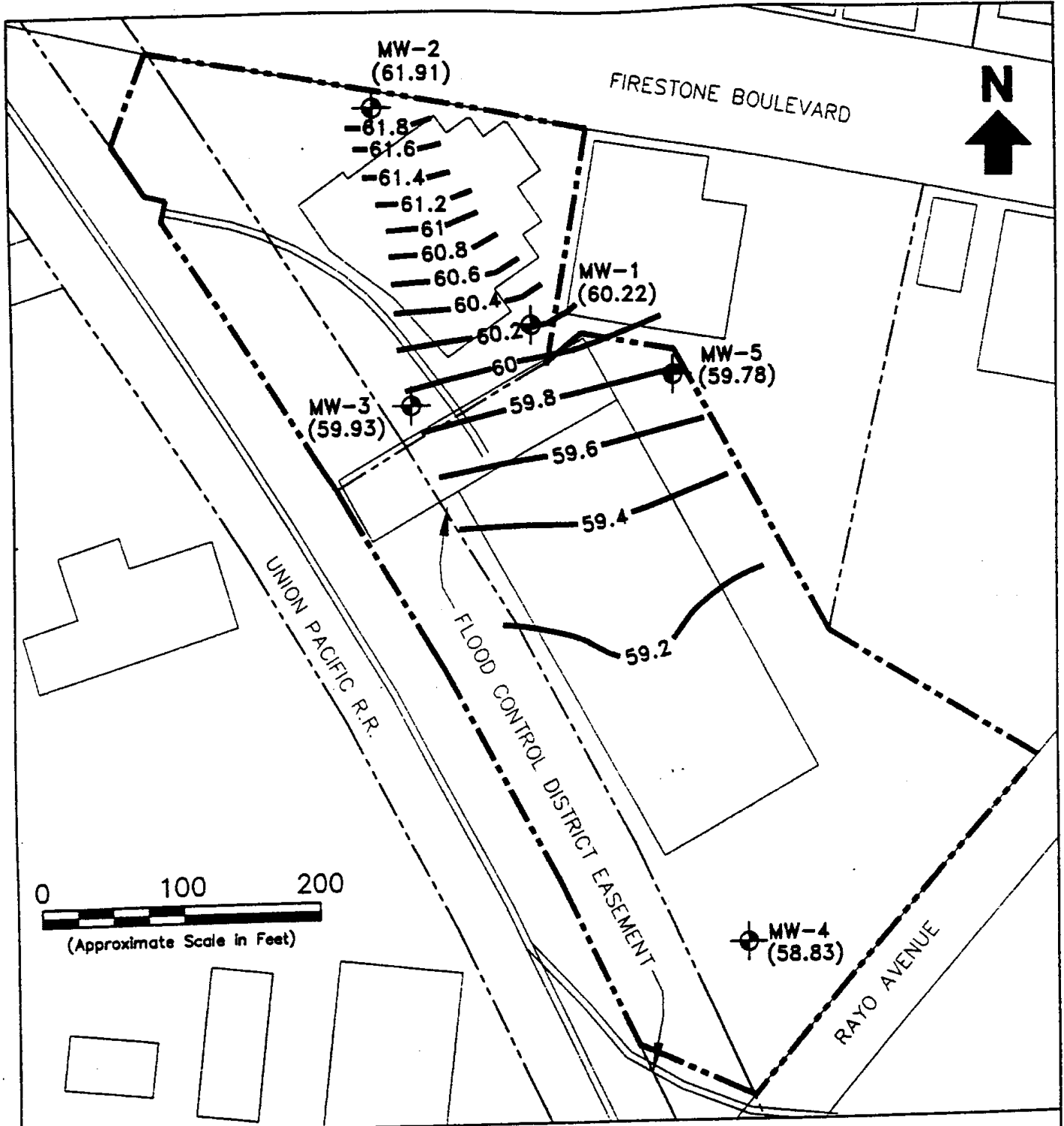
1. All locations are approximate.
2. NR = Not Recorded

**Erler & Kalnowski, Inc.**

Elevation of the Groundwater Table on 7 September 2000

Jervis B. Webb Company of California  
South Gate, California  
October 2000  
EKI 991103.01

Figure 5



# **LEGEND**

- 62.00 — Contour Representing the Elevation of the Groundwater Table in Feet Above Mean Sea Level (msl)
- MW-3 (59.93) Groundwater Monitoring Well with Groundwater Elevation (msl)
- Property Line/Site Boundary

## **Notes:**

1. All locations are approximate.
2. NR = Not Recorded

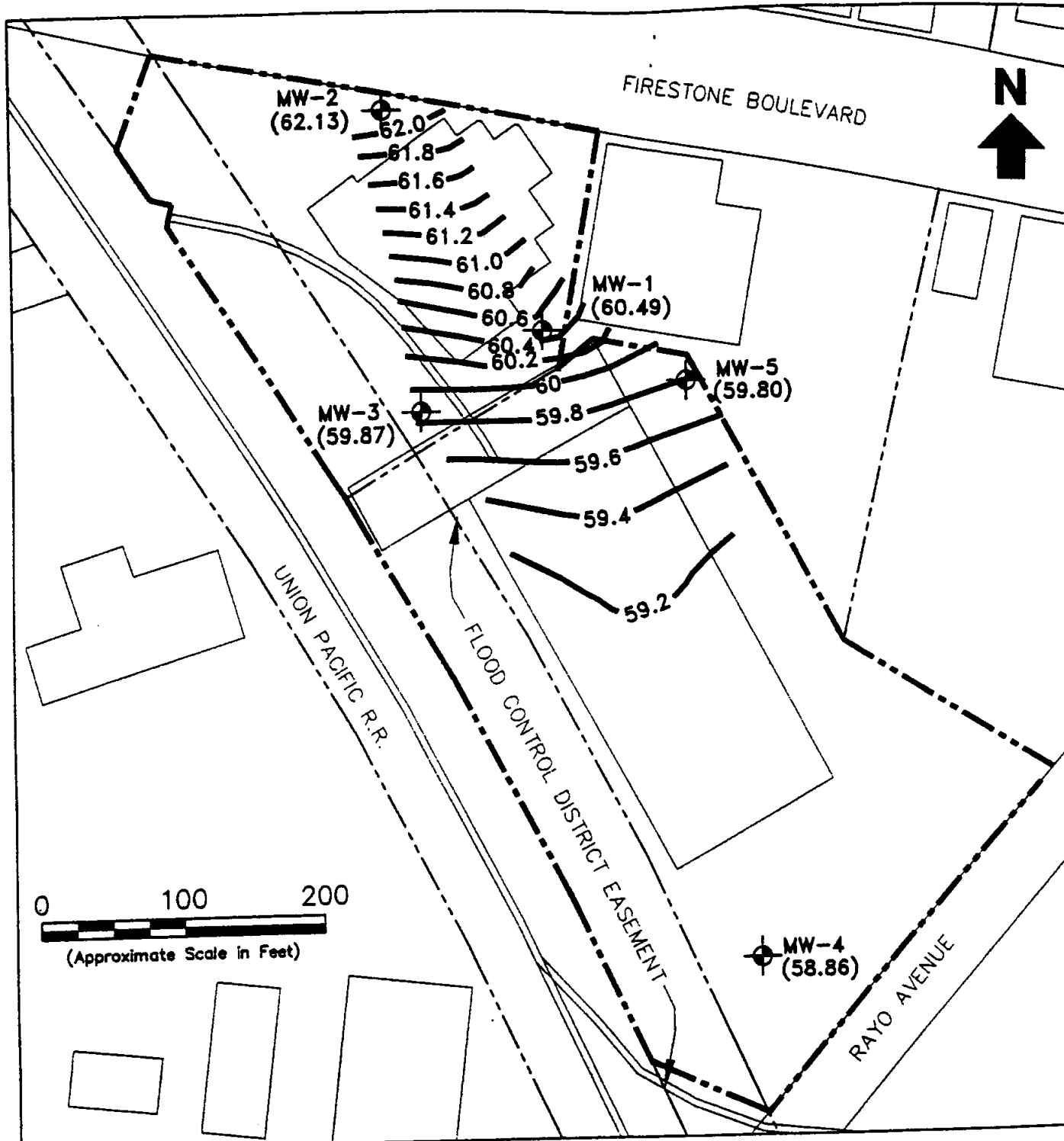
**Erler & Kallnowski, Inc.**

Elevation of the Groundwater Table on 26 October 2000

Jervis B. Webb Company of California  
South Gate, California

February 2001  
EKI 991103.01

**Figure 3**



# **LEGEND**

- 62.0 — Contour Representing the Elevation of the Groundwater Table in Feet Above Mean Sea Level (msl)
- MW-3 (59.87) Groundwater Monitoring Well with Groundwater Elevation (msl)
- Property Line/Site Boundary

## **Notes:**

1. All locations are approximate.
2. NR = Not Recorded

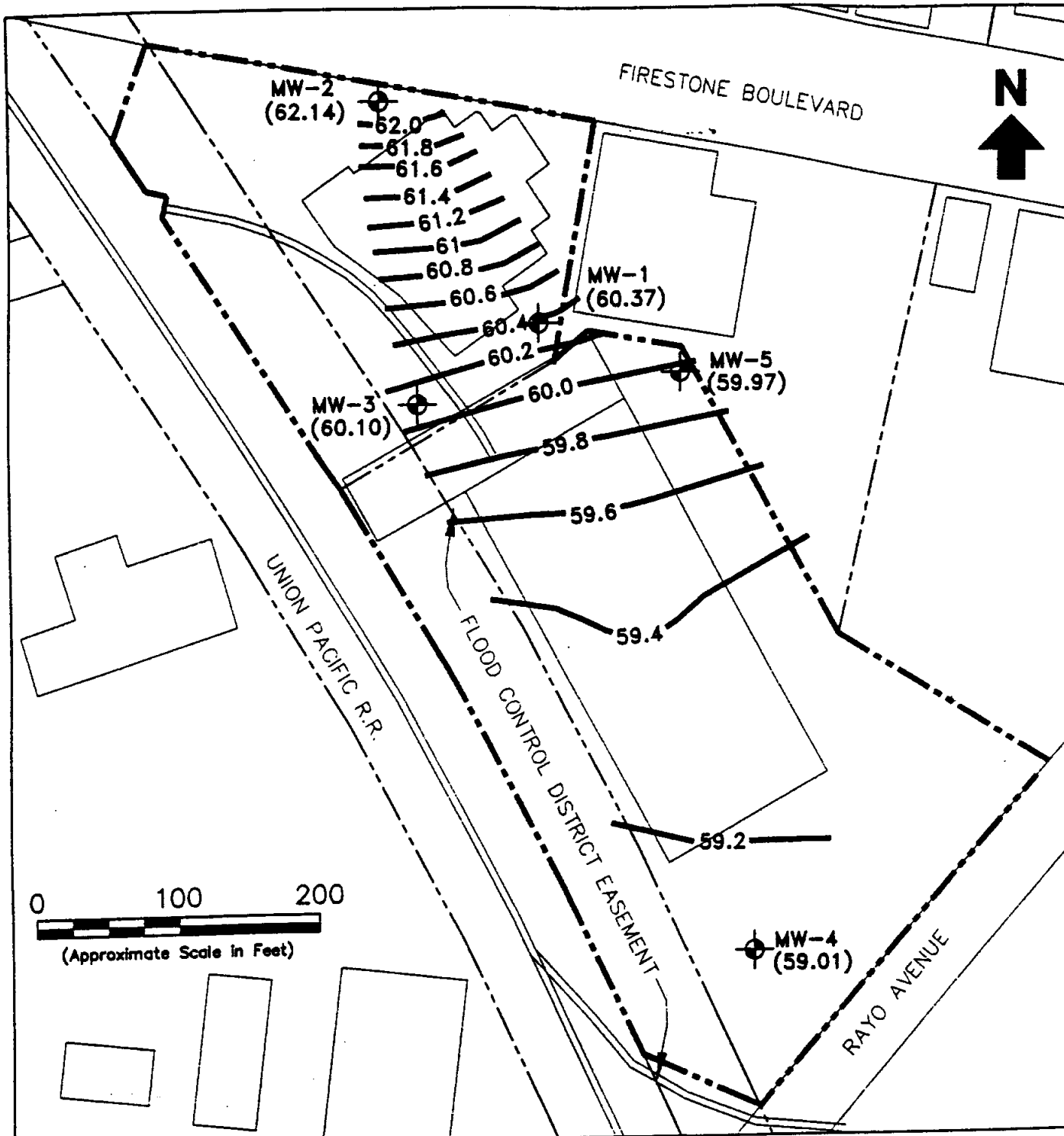
**Erler & Kallnowski, Inc.**

Elevation of the Groundwater Table on 21 November 2000

Jervis B. Webb Company of California  
South Gate, California

February 2001  
EKI 991103.01

Figure 4



# **LEGEND**

- Contour Representing the Elevation of the Groundwater Table in Feet Above Mean Sea Level (msl)
- Groundwater Monitoring Well with Groundwater Elevation (msl)
- Property Line/Site Boundary

## **Notes:**

1. All locations are approximate.
2. NR = Not Recorded

**Erler & Kallnowski, Inc.**

Elevation of the Groundwater Table on 5 December 2000

Jervis B. Webb Company of California  
 South Gate, California  
 February 2001  
 EKI 991103.01

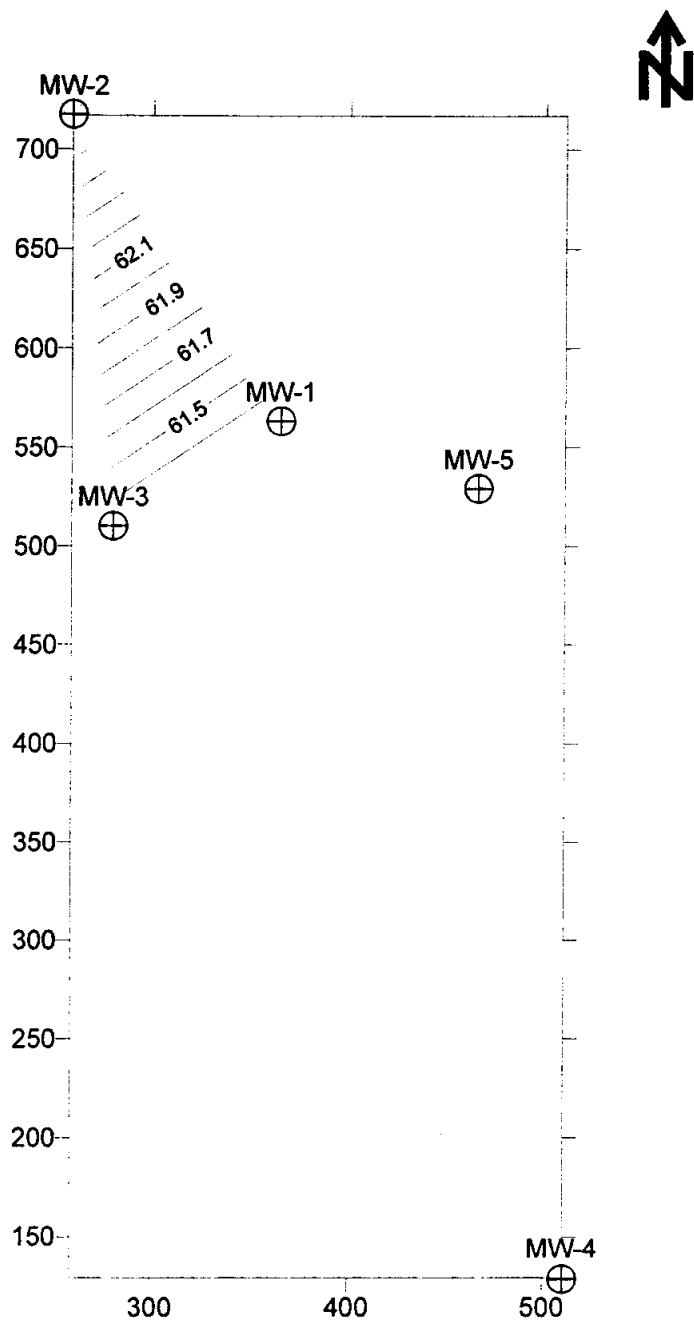
**Figure 5**



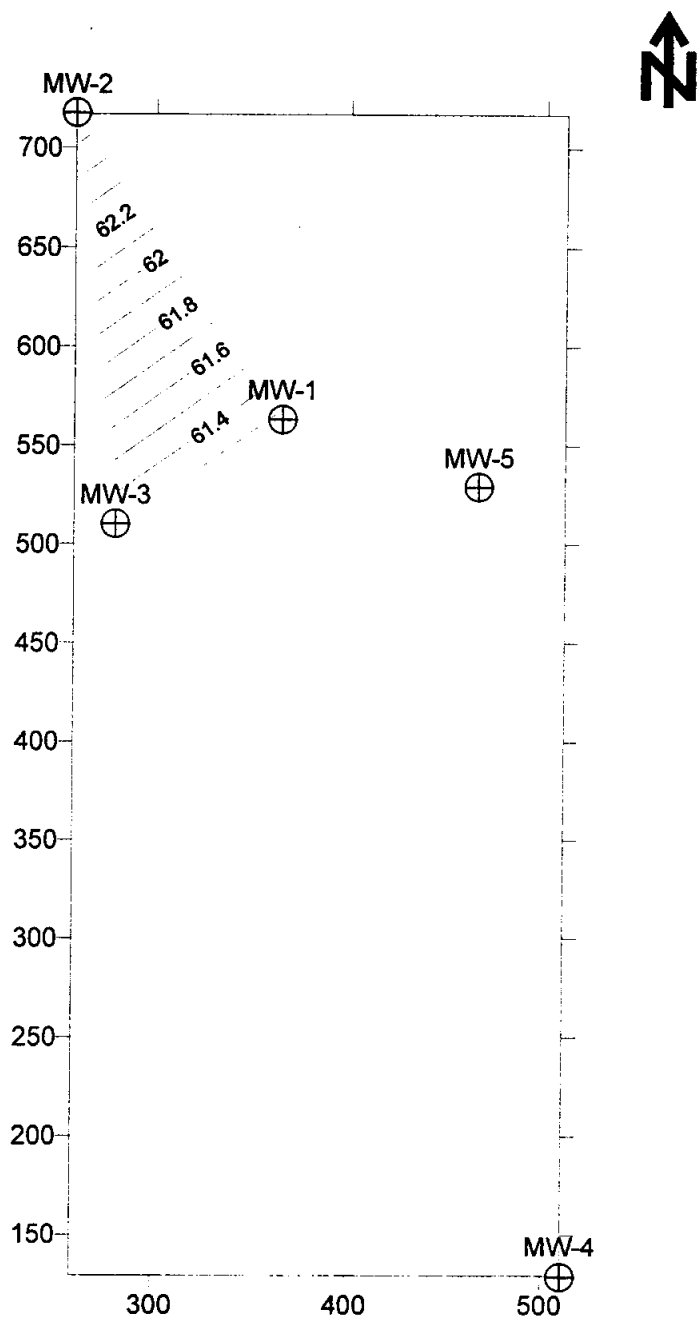


**APPENDIX C**

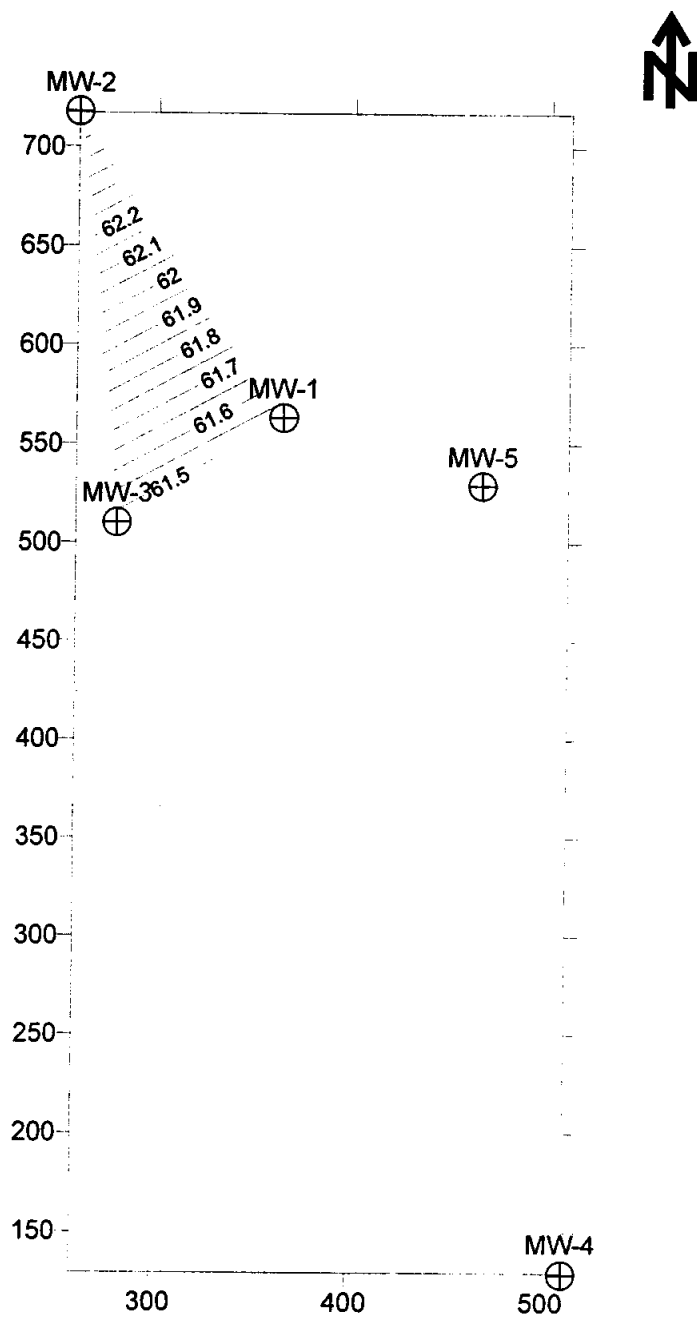
**SURFER WATER TABLE MAPS**  
**FEBRUARY 1998 TO DECEMBER 2000**

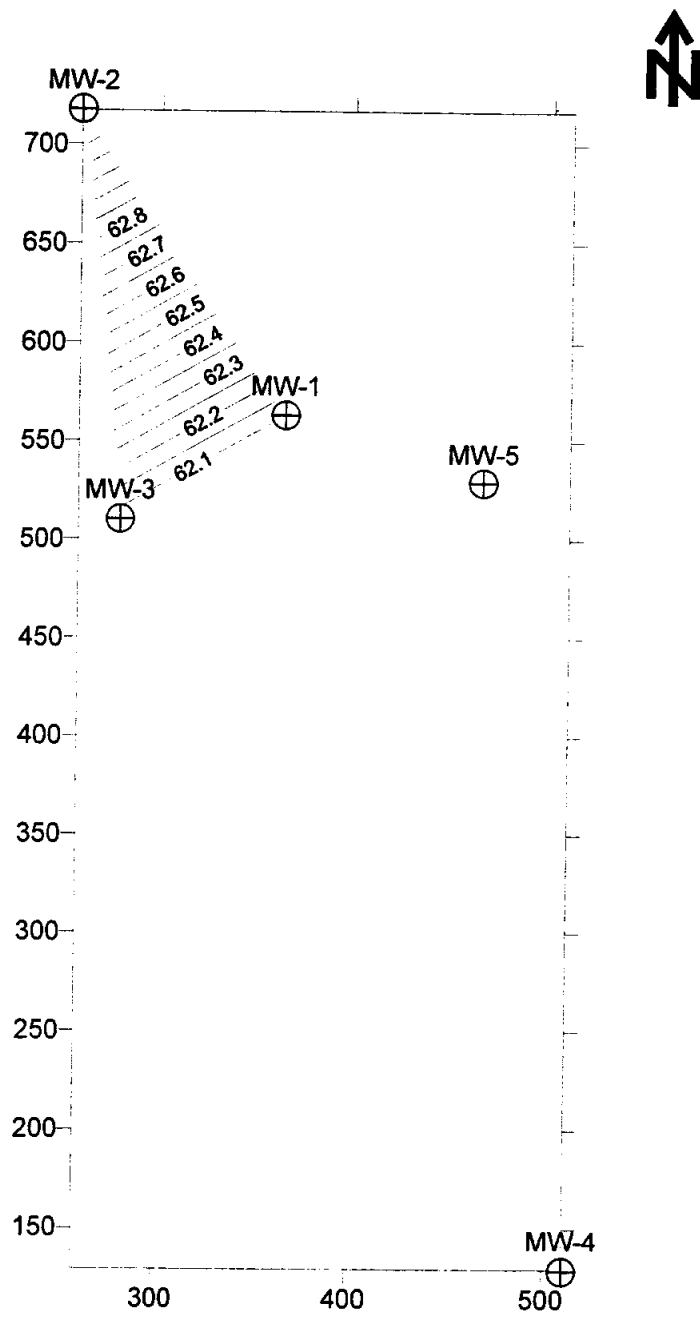


02/27/98 Groundwater Elevations

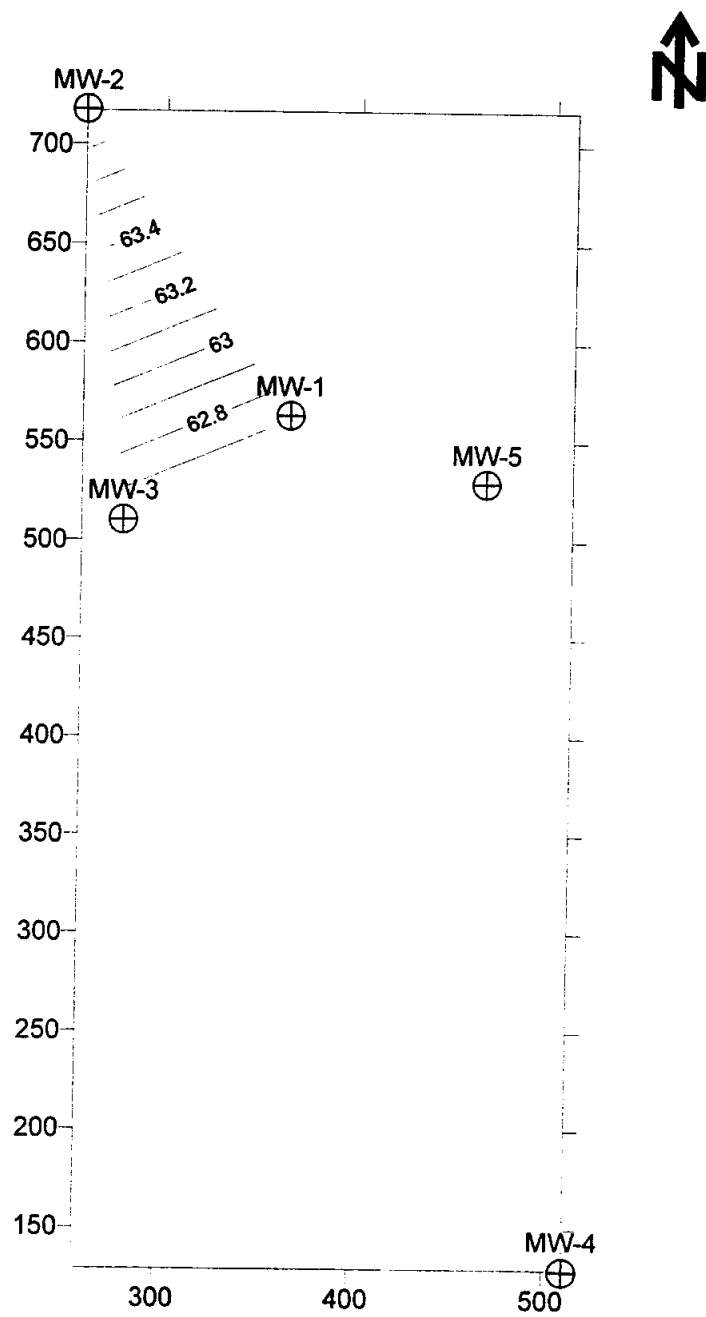


03/02/98 Groundwater Elevations

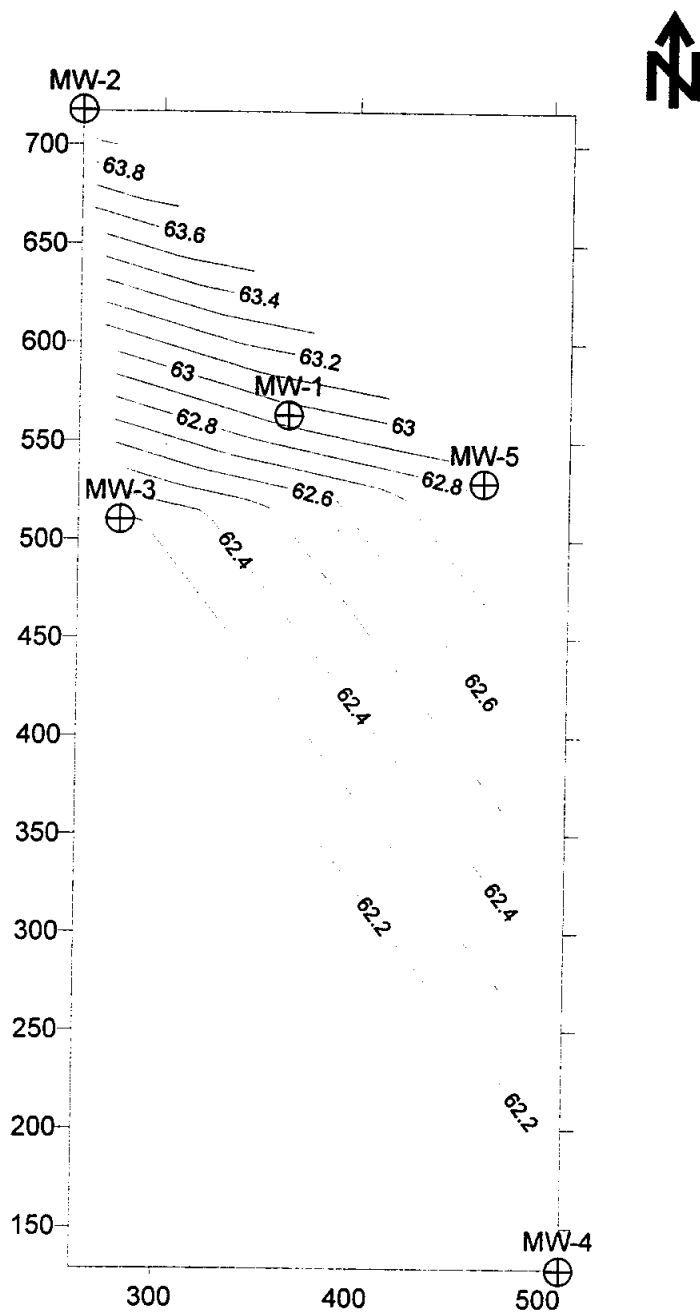




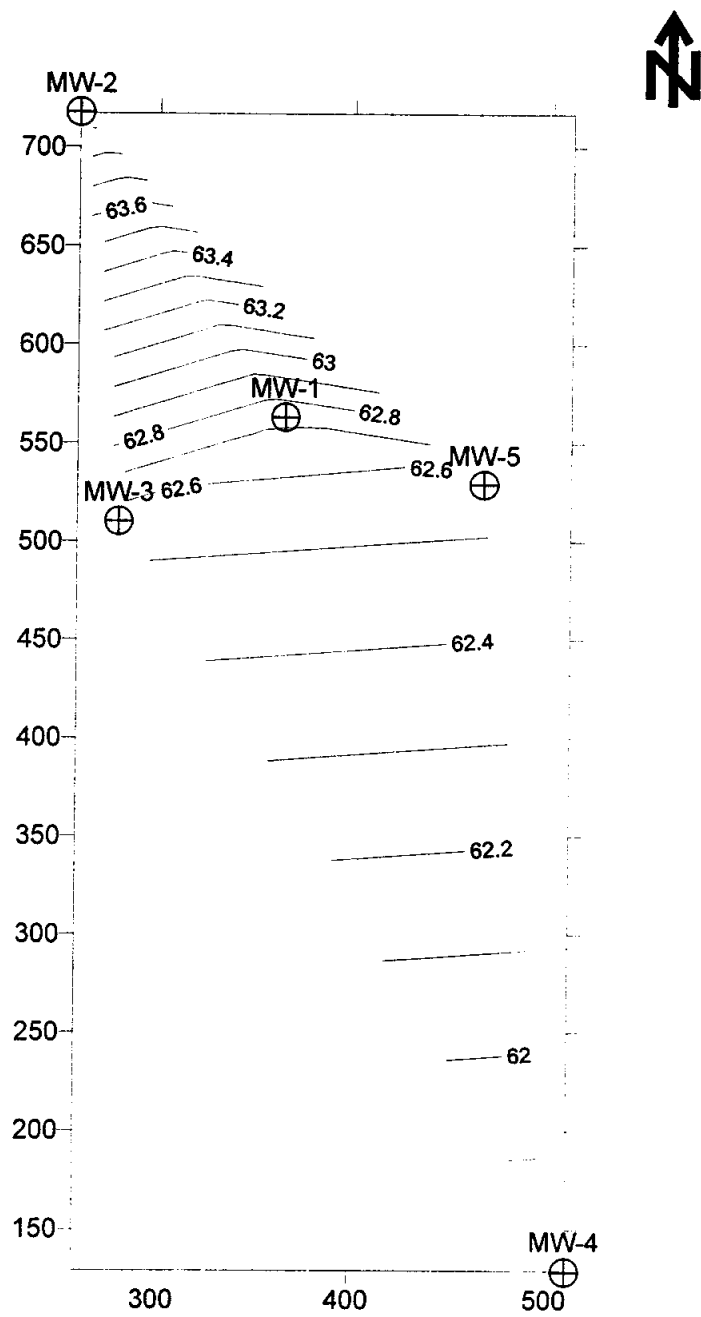
05/20/98 Groundwater Elevations



10/08/98 Groundwater Elevations

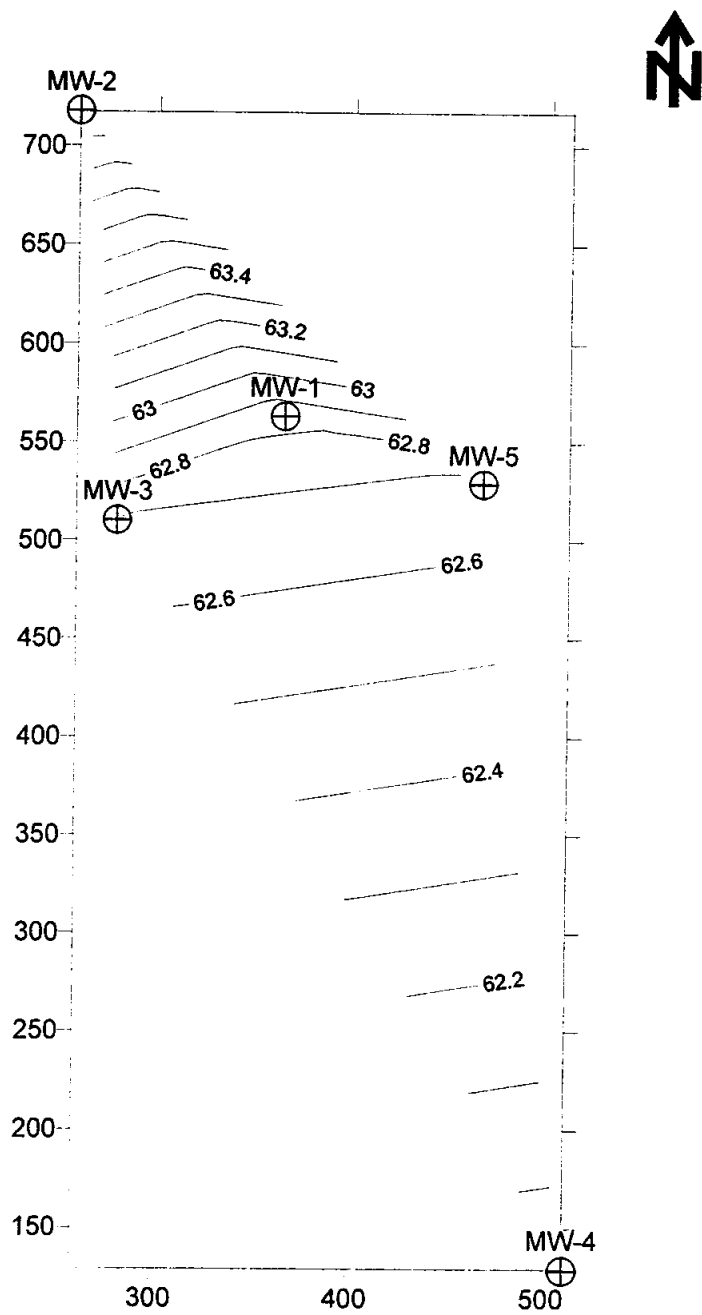


11/05/98 Groundwater Elevations

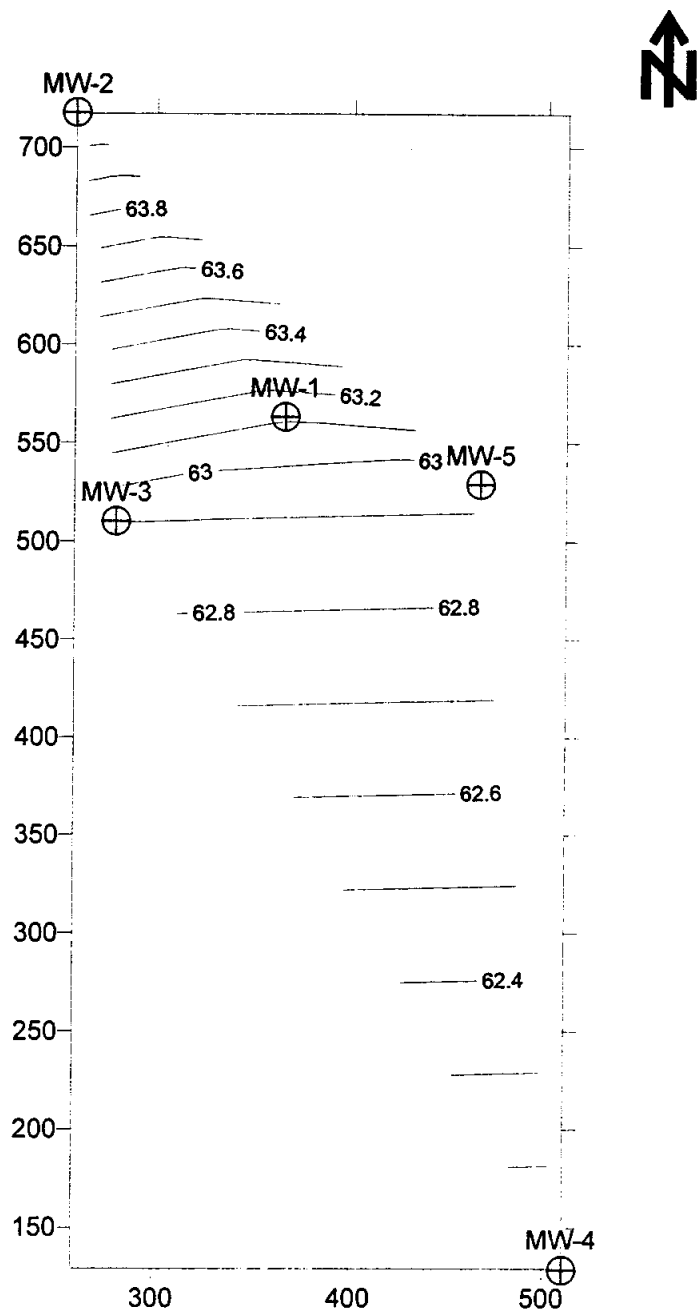


12/21/98 Groundwater Elevations

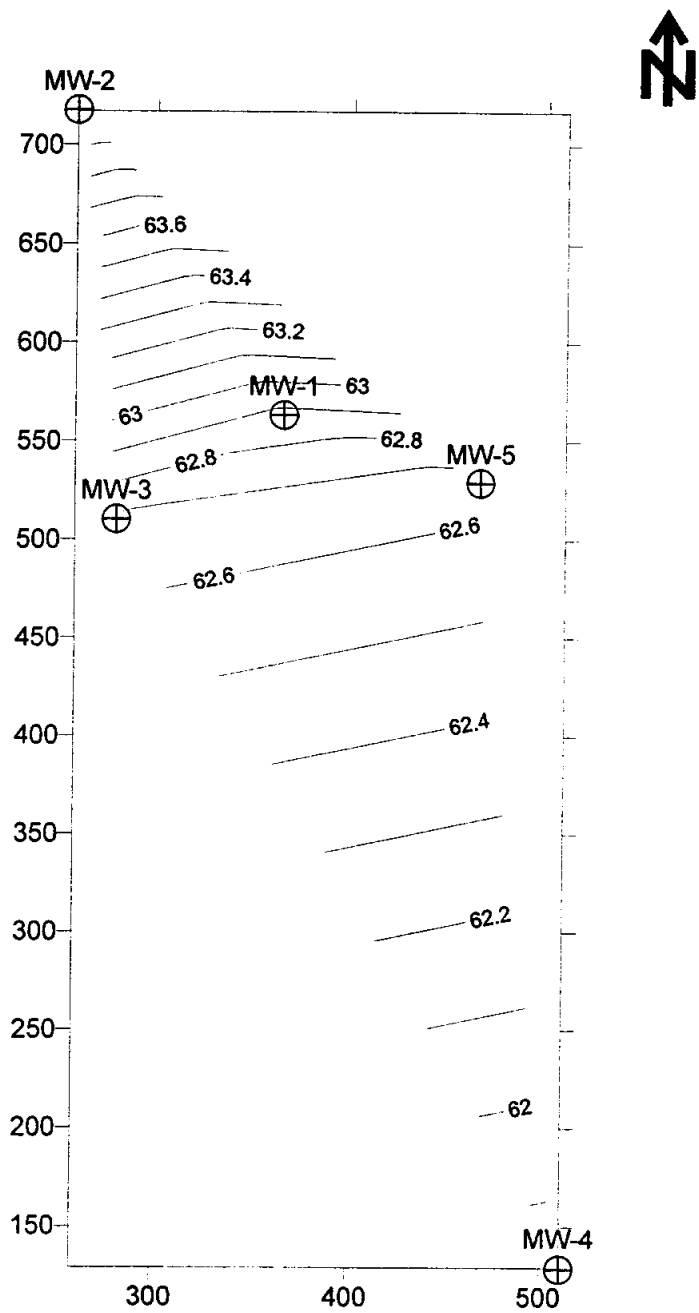




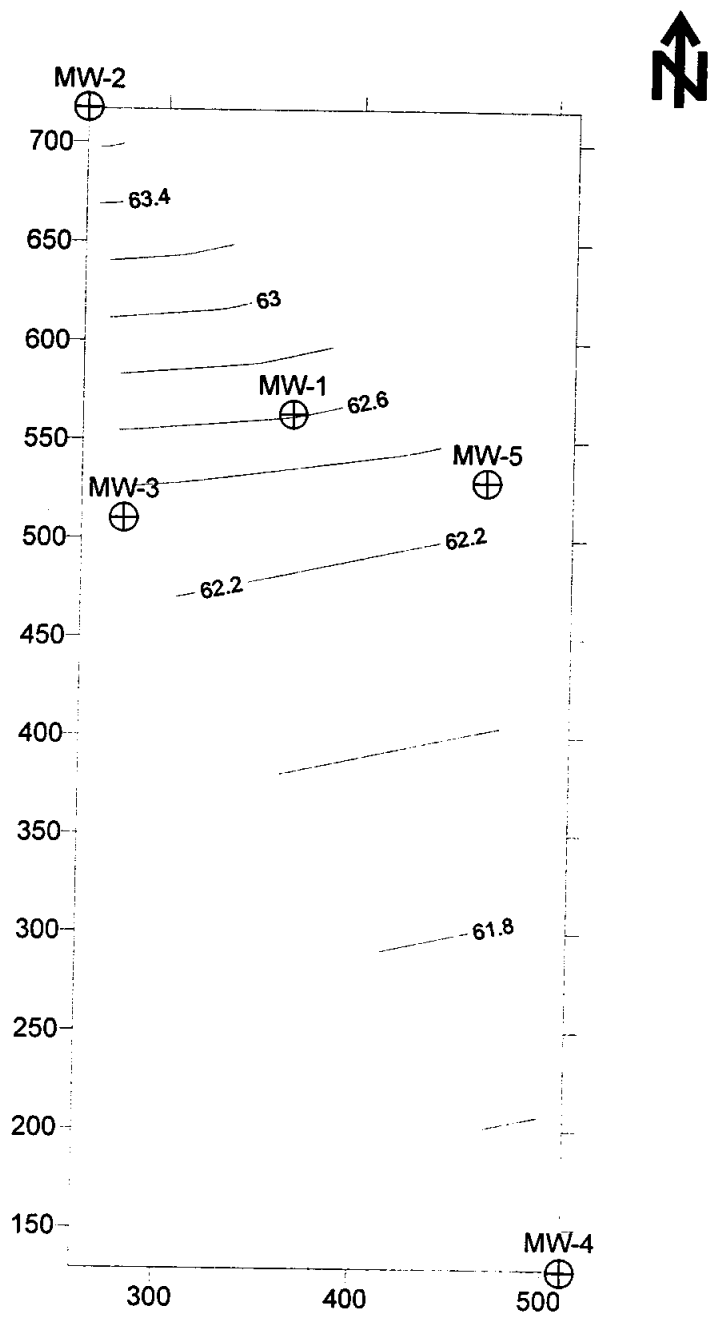
01/19/99 Groundwater Elevations



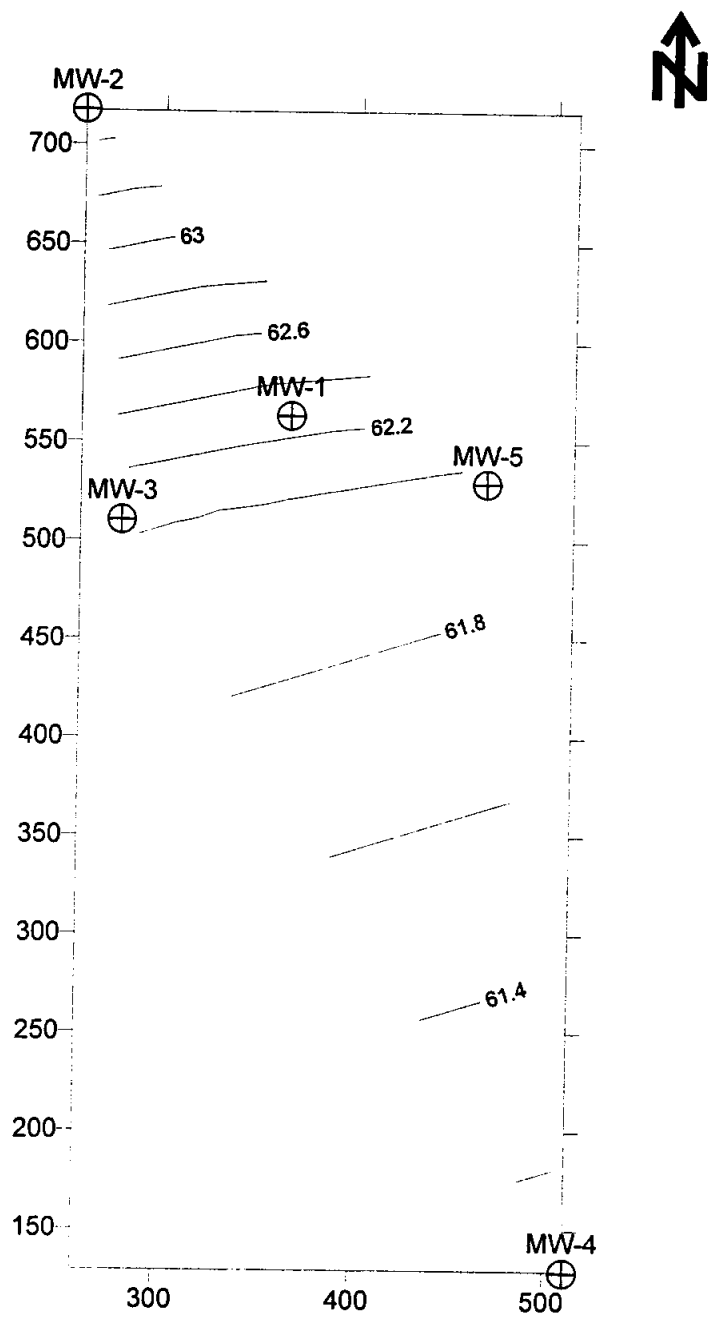
02/03/99 Groundwater Elevations



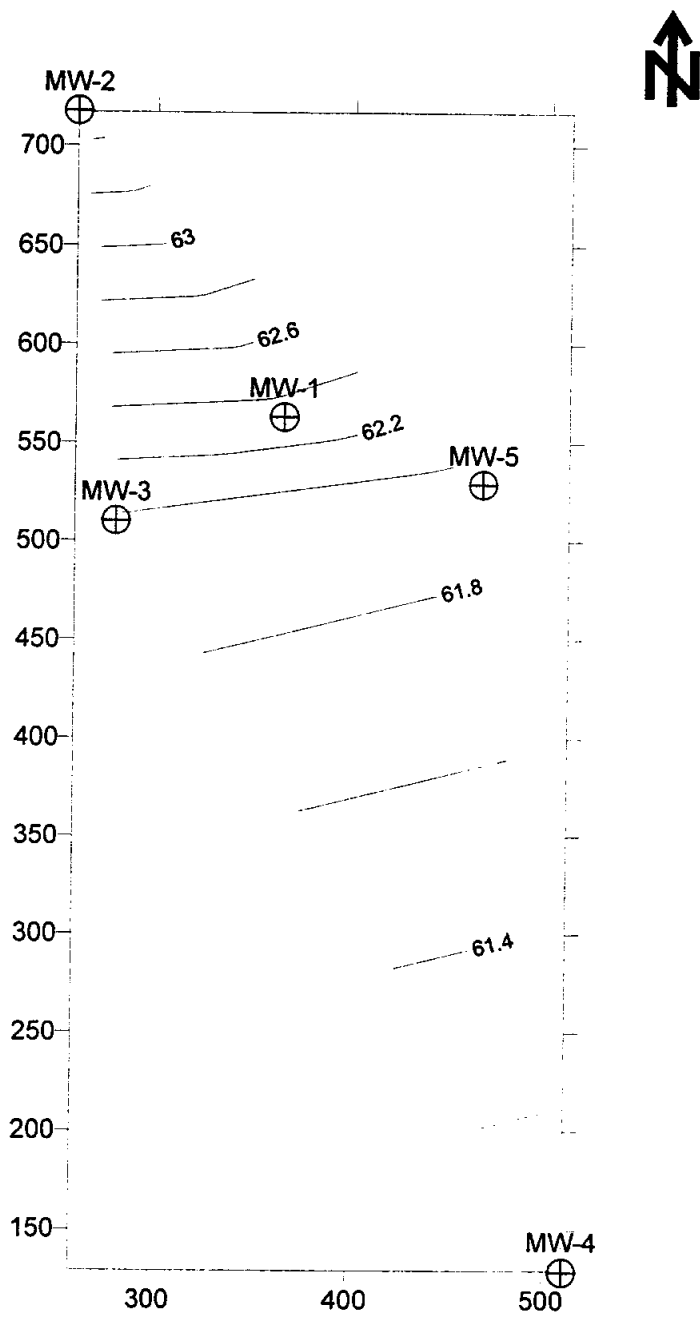
03/30/99 Groundwater Elevations



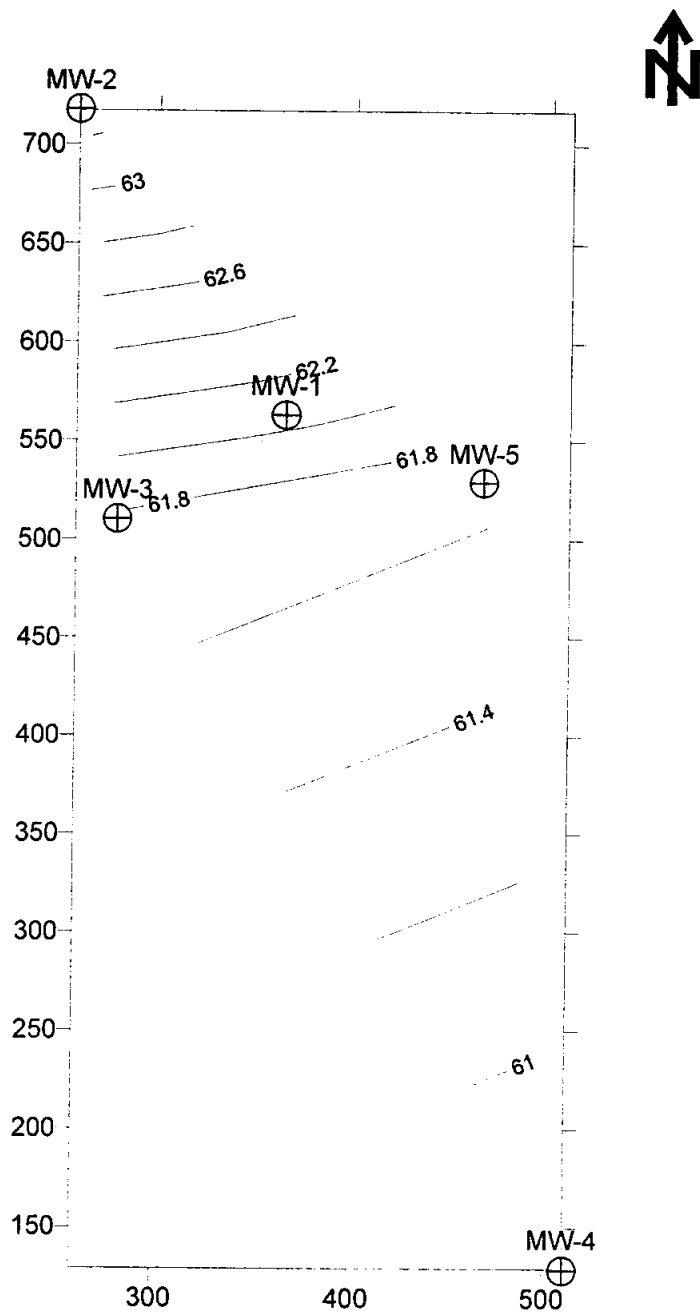
06/01/99 Groundwater Elevations



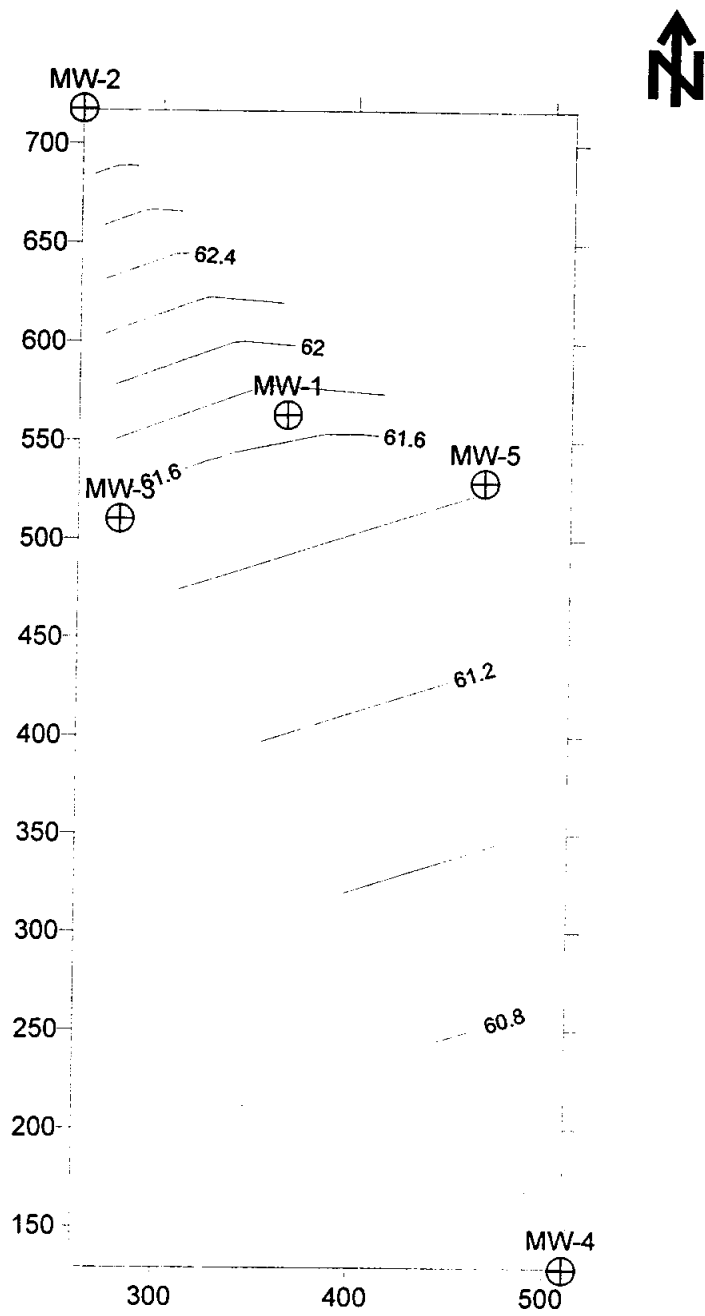
07/29/99 Groundwater Elevations



09/01/99 Groundwater Elevations

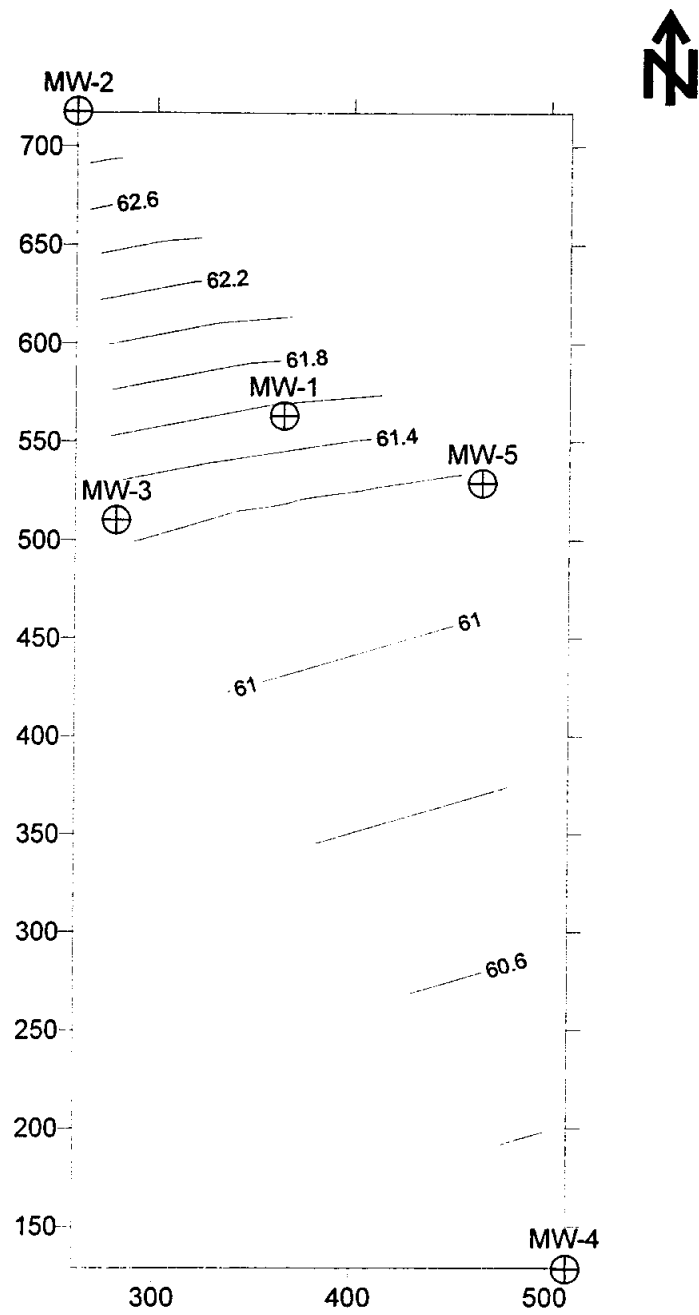


09/23/99 Groundwater Elevations

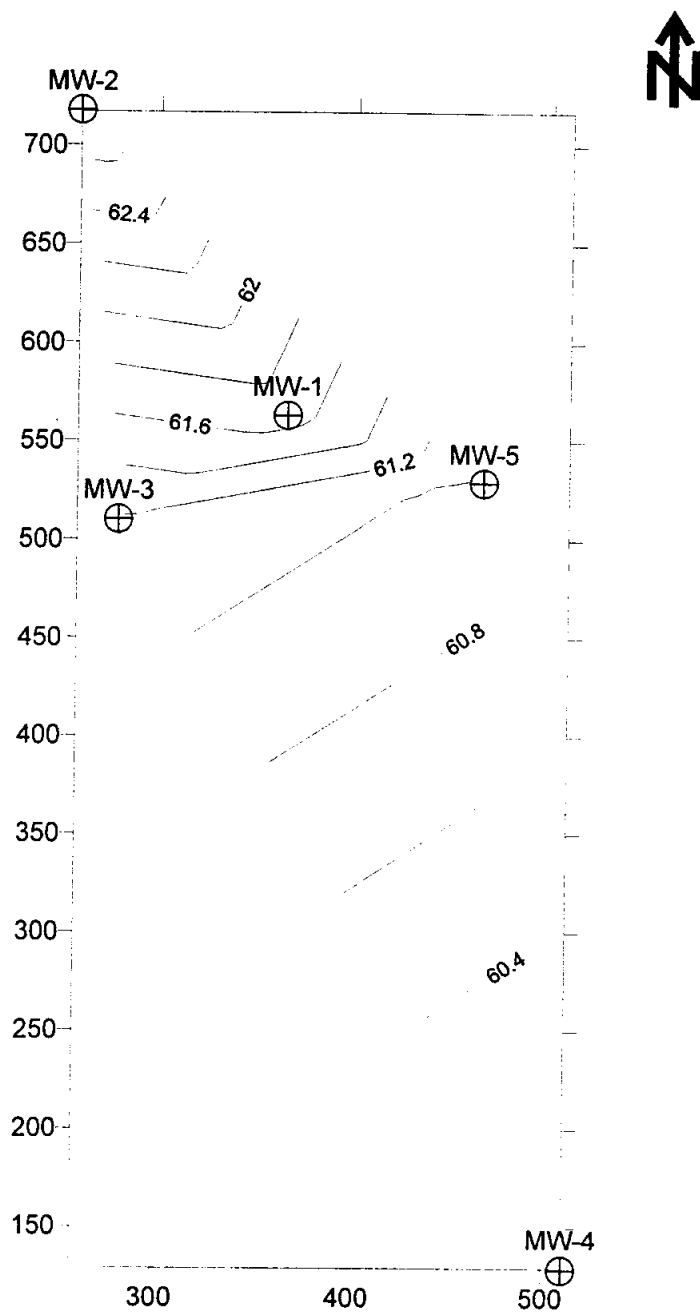


10/18/99 Groundwater Elevations

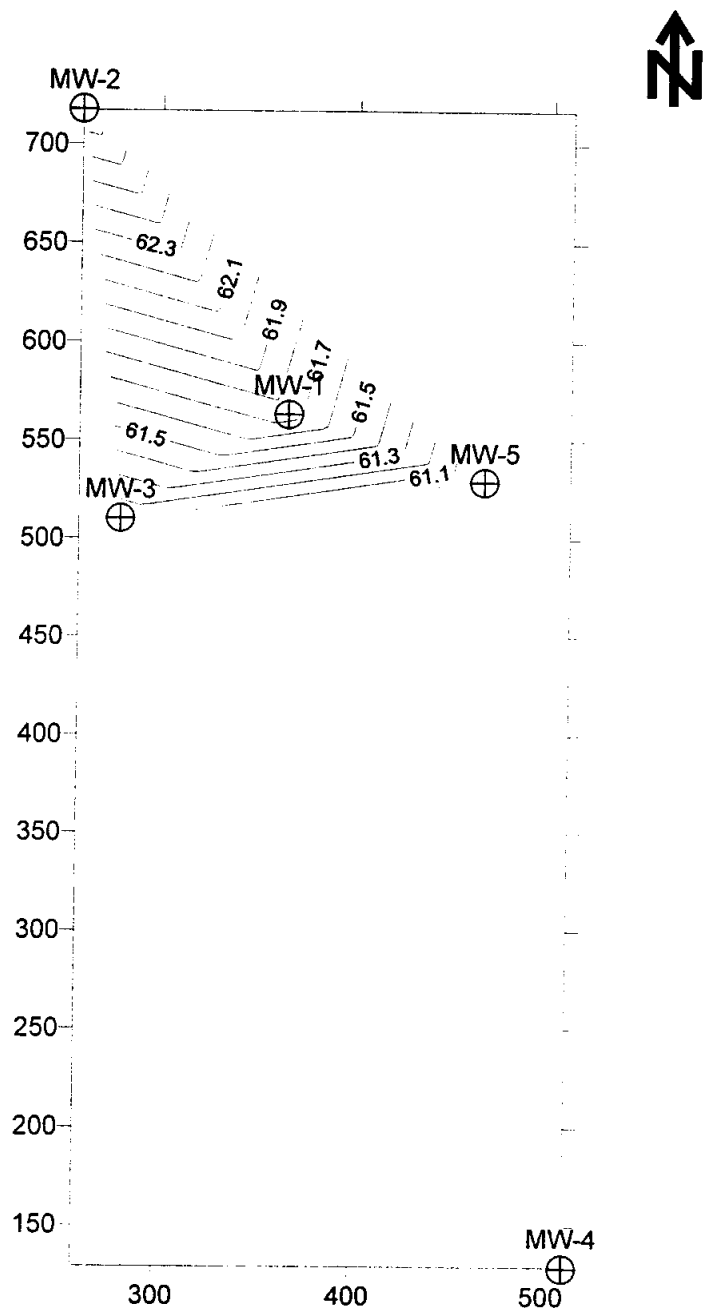




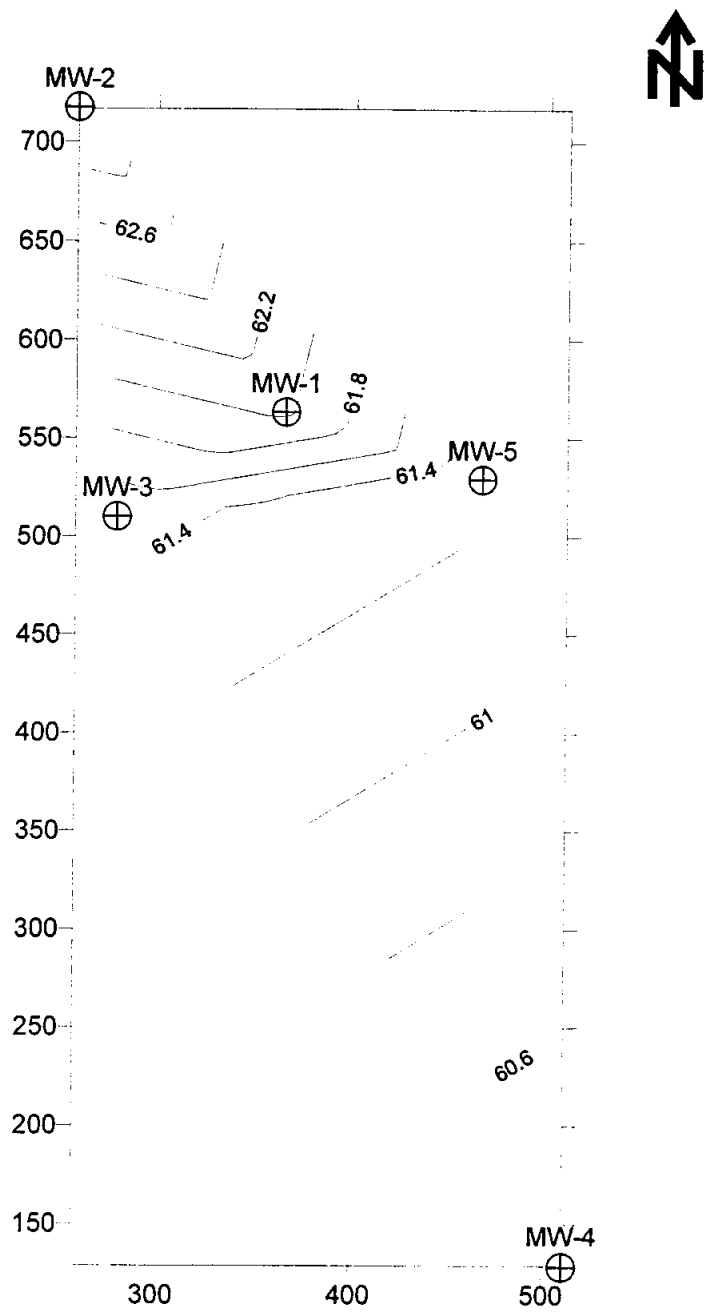
12/08/99 Groundwater Elevations

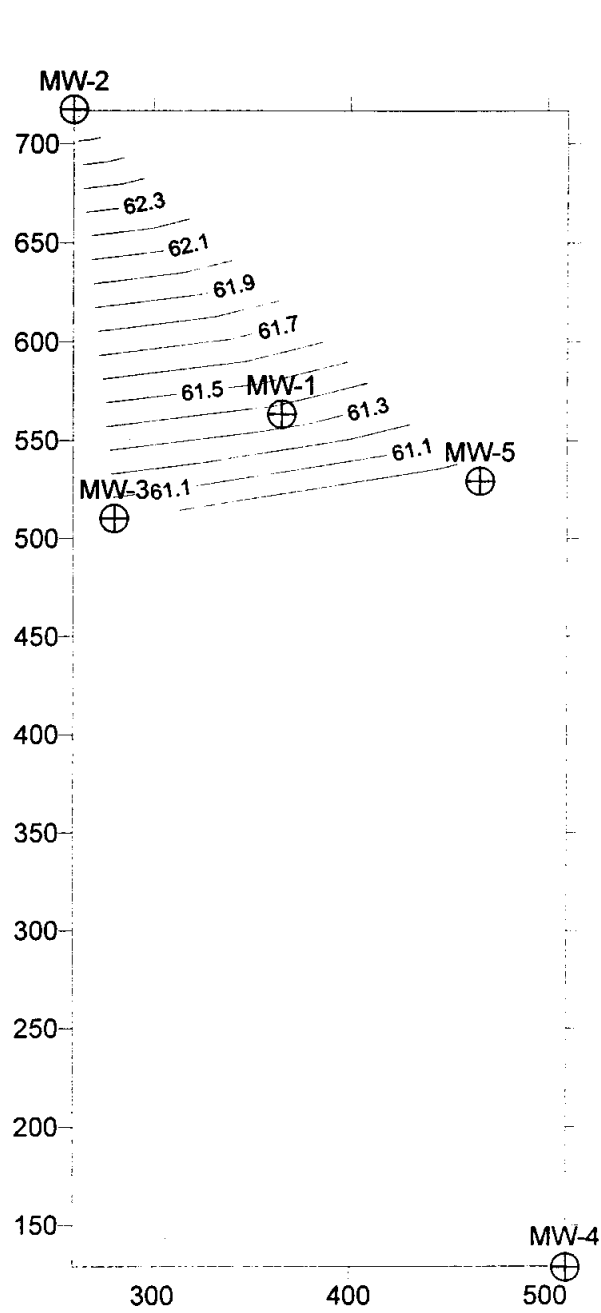


01/27/00 Groundwater Elevations

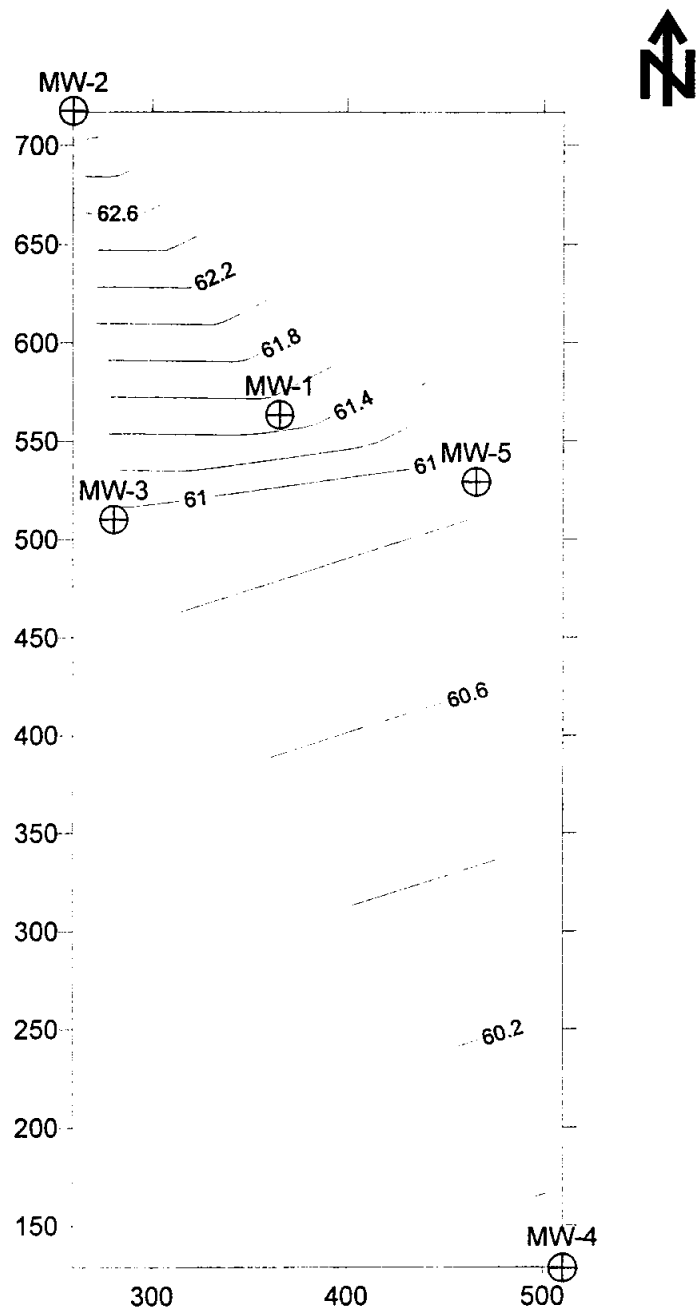


02/28/00 Groundwater Elevations

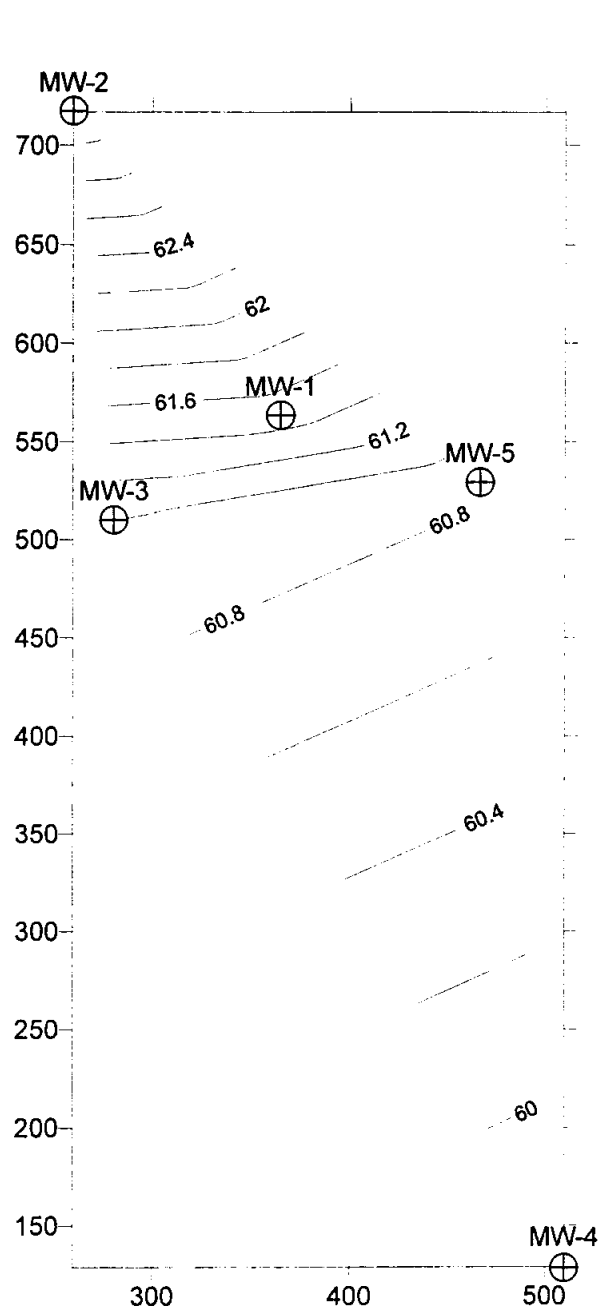




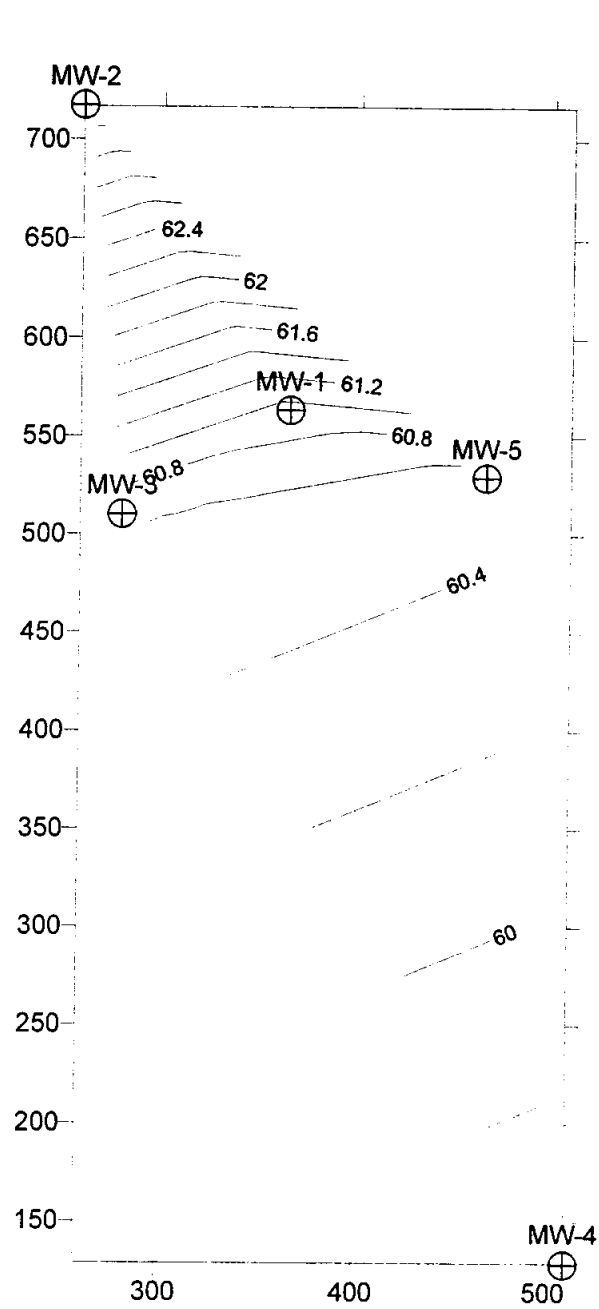
04/13/00 Groundwater Elevations



05/18/00 Groundwater Elevations

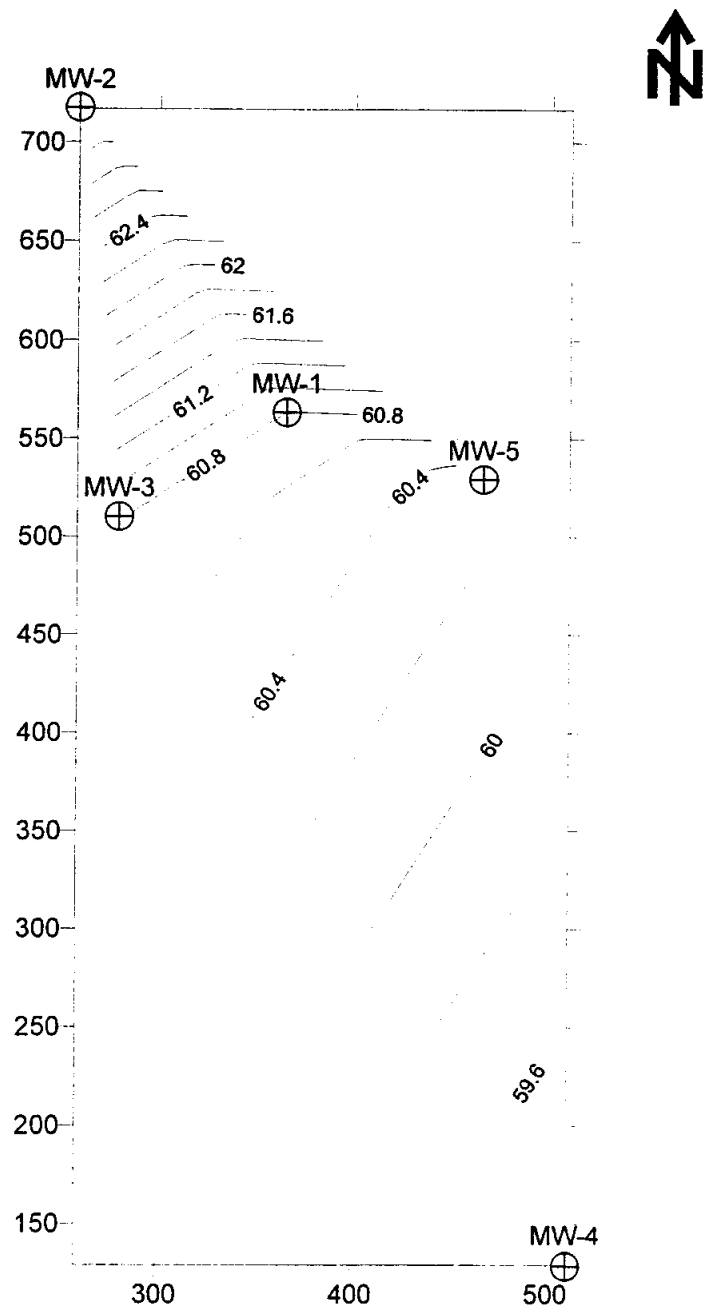


06/20/00 Groundwater Elevations

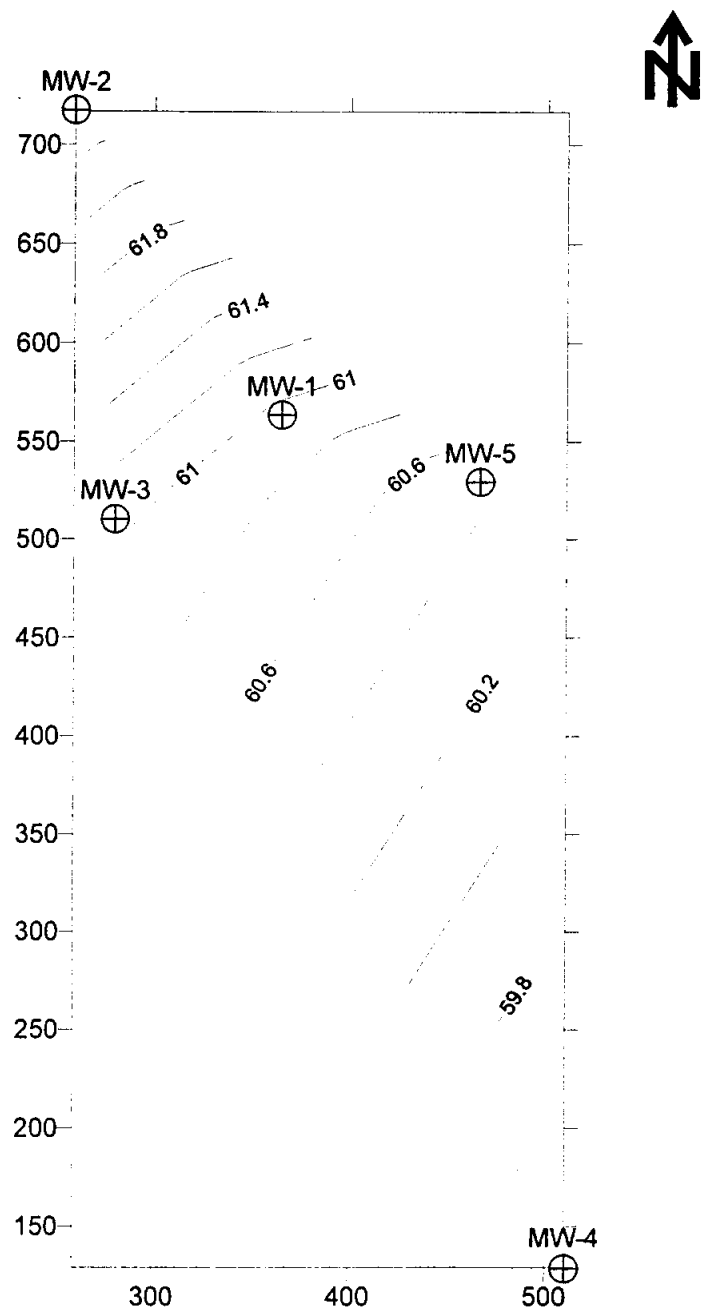


07/13/00 Groundwater Elevations

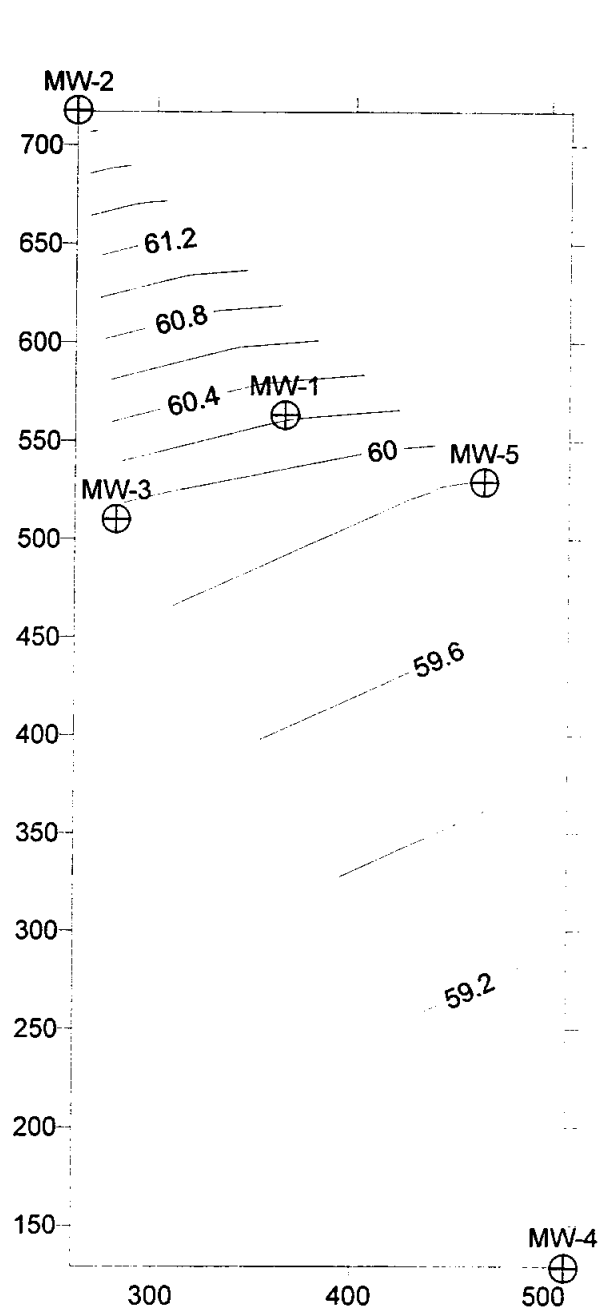




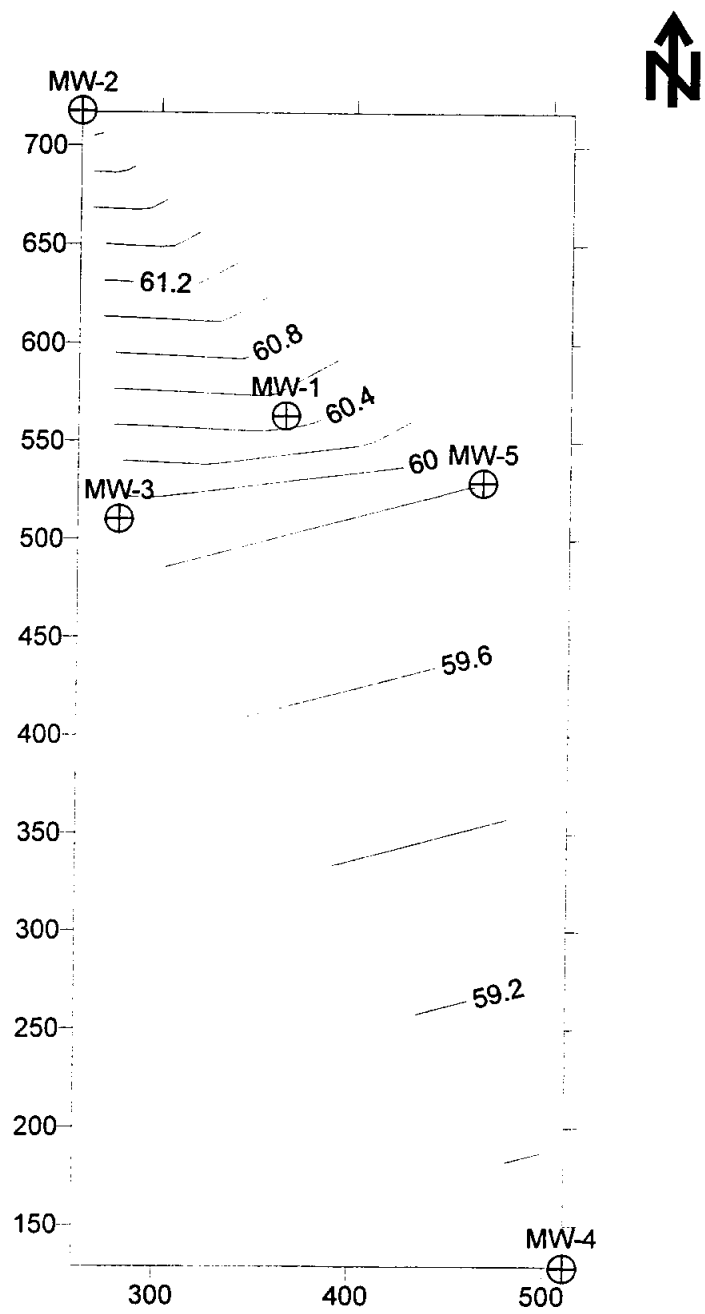
08/17/00 Groundwater Elevations



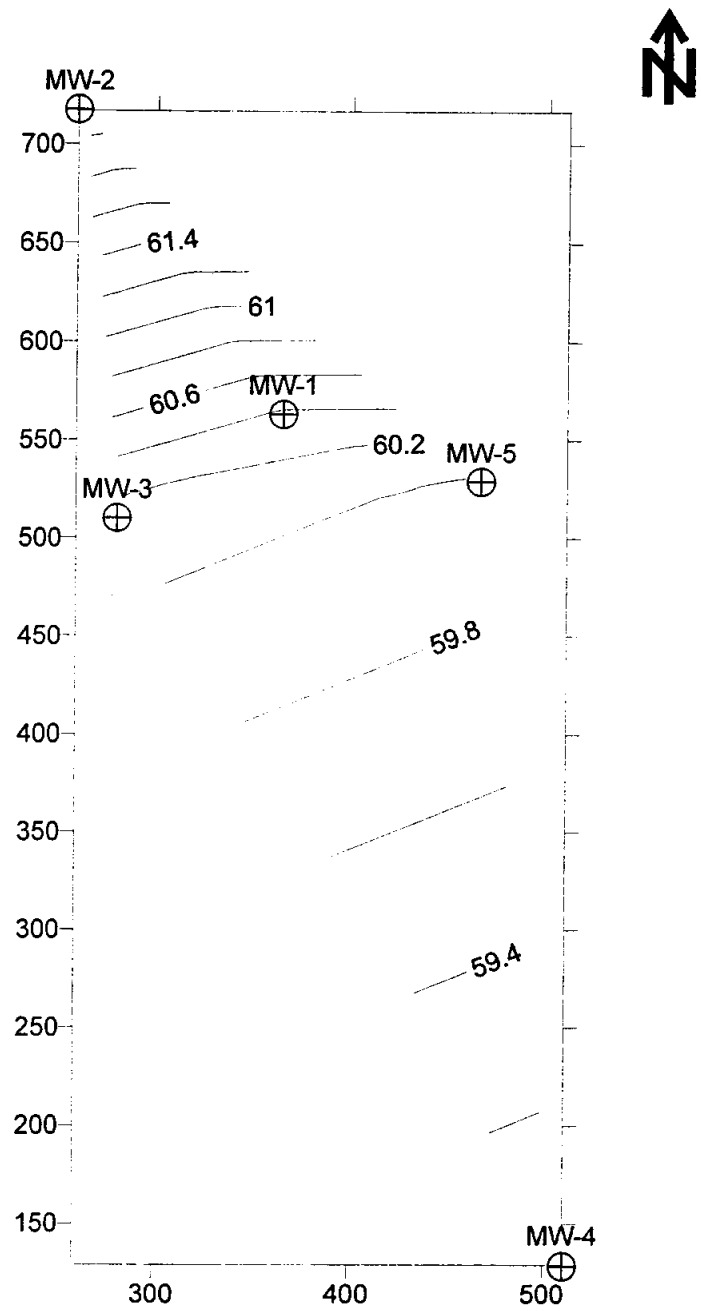
09/07/00 Groundwater Elevations



10/26/00 Groundwater Elevations



11/21/00 Groundwater Elevations



12/05/00 Groundwater Elevations